FAMATCGRAPH 2018

FAMAT Competition Guidelines/Regulations and Policy Handbook

TABLE OF CONTENTS

INTRODUCTION

This handbook was created to assist Mu Alpha Theta sponsors and mathematics team coaches with information about Mu Alpha Theta sponsorship, mathematics competition guidelines and policies, and Florida Association of Mu Alpha Theta (FAMAT) affiliation and services. The information in this handbook evolved in an effort to make knowledge of FAMAT and its functions easier to understand for new sponsors. It will continue to evolve as new needs and/or other factors arise. New and experienced sponsors and coaches can learn much by familiarizing themselves with this handbook. If you have any questions or suggestions, please feel free to contact any current FAMAT Executive Board members. We, like you, are dedicated to improving mathematics education in Florida by providing exciting activities for our students.

We welcome you and look forward to your and your school school's participation in FAMAT and FAMAT's sanctioned activities. Please visit our website and its associated links at www.floridamao.org.

PART I

FAMAT

Florida Association
of
Mu Alpha Theta

PURPOSE

The Florida Association of Mu Alpha Theta (**FAMAT**) was created to coordinate the activities of the growing number of Mu Alpha Theta chapters in Florida. In its attempt to coordinate the various activities, **FAMAT** standardized and provided unified guidelines for these activities. **FAMAT** hosts an annual state convention and sanctions Regional and Statewide competitions held around the state, generally from January through April. Additionally, FAMAT also sponsors mail-in competitions in November and December. FAMAT provides, when possible and available, speakers and presenters to share new and different ideas in, about, and related to mathematics. FAMAT uses all of these types of activities to help foster and encourage the enjoyment of and interest in mathematics.

MEMBERSHIP

Membership in FAMAT is open to all Florida high schools, which have an active national Mu Alpha Theta Chapter and Charter. Additionally, middle schools may join FAMAT for the purposes of competition only.

Membership is renewed each year with the state organization, FAMAT, by paying the appropriate annual dues. The membership dues for each high school are $7 per Mu Alpha Theta member or $70

whichever is greater. The middle school fee is set at $70 per school year. The membership dues and online roster are to be submitted to the FAMAT treasurer by November 1 of each school year. Only schools, which have joined FAMAT by paying the annual dues by the deadline date, are eligible to attend the FAMAT State Convention. It should also be noted that only those students who have been registered with FAMAT, either as full or associate members, may attend the State Convention, even though the school itself is a member in good standing of FAMAT.

Full members are defined as students in grades 9-12 who have completed four semesters of college preparatory mathematics, are enrolled in a more advanced mathematics course, or have completed the highest course offered at the school, and have maintained a B or better average in mathematics.

Associate members are defined as students in grades 9-12 who have completed two semesters of Algebra with a grade of B or better and are enrolled in a third semester of advanced mathematics.

Students in grades lower than 9 are not eligible to become members of FAMAT or National Mu Alpha Theta even if they take their mathematics course at a 9-12 school. Students are considered to be in grade 9 according to where their permanent record is held.

CONSTITUTION

ARTICLE I: Name

The name of the organization shall be the Florida Association of Mu Alpha Theta, Inc.

ARTICLE II: Purpose

The purpose of this organization is to promote scholarship in and enjoyment and understanding of mathematics among high school and junior college mathematics students through the unification of the Mu Alpha Theta chapters in the state of Florida.

ARTICLE III: Membership

A. Any Mu Alpha Theta Chapter in the state of Florida with National Mu Alpha Theta affiliation shall be eligible for membership in the

state organization.
B. Approval for membership shall be given by the Executive Board upon written application by the chapter and receipt of dues.
C. The Executive Board has the right to declare on probationary status any member chapter that fails to abide by the provision of the Constitution and by-laws of the organization.
D. Chapters with probationary status shall be reinstated upon review by the Executive Board.

ARTICLE IV: Officers

A. Officers

1. The elected officers of the organization shall be the President; Vice- President for State Convention; Vice-President for Regional/Statewide Competitions; Secretary; Treasurer; Vice President for Computer Operations; Vice-President for State Tests; and Regional Directors

2. The President; Vice-President for State Convention; Vice-President for Regional/Statewide Competitions; Vice-President for State Tests, Vice-President for Computer Operations, Secretary; and Treasurer will be nominated either by the Committee on Nominations or from the floor of the sponsors' meeting at the annual convention.

3. The President; Vice-President for State Convention; Vice-President for Regional/Statewide Competitions; Vice-President for State Tests and other FAMAT competitions; Vice-President for Computer Operations, Secretary; Treasurer shall be elected at the annual convention by a majority of votes of those schools present at the convention. Each school shall be given one vote.

4. Regional Directors shall be elected at the last regional competition by a majority vote of those sponsors present at the sponsors' meeting. Each member chapter shall be given one vote.

5. Officers elected at the annual sponsors' meeting at the State Convention shall hold office from the close of the convention at which they are elected until the close of the

next annual state convention. Officers may be elected for consecutive terms.

B. Duties. The duties of the officers shall be as follows:

1. President
   a. Promote the activities of the organization.
   b. Preside at meetings of the organization.
   c. Represent the organization when necessary.
   d. Administer the policies of the Constitution and the By - Laws.
   e. Appoint a chairman of the Nomination Committee from among the Regional Directors.
   f. Sign contracts for State Convention (Vice President for State Convention and Treasurer).
   g. Develop a calendar for Regional and Statewide competitions.
   h. Coordinate the test writer for the Fall Interschool test.

2. Vice – President for State Convention
   a. Act in the absence of the President and act for the President when requested to do so.
   b. Coordinate the activities of the annual State Convention.

3. Vice – President for Regional/Statewide Competitions
   a. Coordinate the Regional competitions.
   b. Coordinate the writing of tests for Regional competitions.
   c. Inform Statewide hosts of the test writing responsibilities.
   d. Coordinate the test writers Hiller/Nunn/Dostal Tests.
   f. Send the Hiller/Dostal/ Nunn tests via email.

4. Vice - President for State Tests
   a. Arrange for editing, printing of all state tests.
   b. Responsible for testing and coordination between dispute center and scoring room at State Convention.

5. Vice - President for Computer Operations
    a. Maintain the scoring program
    b. Train newcomers on the scoring program
    c. Maintain www.floridamao.com
    d. Maintain online enrollment
    e. Score the State Convention
    f. Maintain a list of member chapters.
    g. Maintain a list of all student members of each member chapter.
    h. Maintain a list of sponsors of member chapters.

6. Secretary
    a. Maintain a record of the minutes of all organization meetings.
    b. Handle all correspondence of the organization.
    c. Maintain and disseminate a current Constitution and By - Laws.

7. Treasurer
    a. Collect and disburse funds of the organization.
    b. Provide an annual financial report at the State Convention.
    c. Maintain a record of all financial transactions of the organization.

8. Regional Directors
    a. Represent their region on the Executive Board.
    b. Assist the Vice-President for Regional/Statewide competitions with competitions in their region.
    c. Assist regional competition hosts
    d. Be able to run the scoring program

9. Parliamentarian
    a. Maintain and update the FAMATCGRAPH

ARTICLE V: Executive Board

A. There will be an Executive Board composed of the elected officers named under Article IV and the Membership Chairman; the National Mu Alpha Theta Representative; parliamentarian

B. Each member of the Executive Board shall have one vote on the Board.

C. It will be the duty of the Executive Board to manage the affairs and funds of the organization in accordance with the charges of the Association as expressed in its general meetings.

D. There shall be a minimum of two regular meetings of the Executive Board called each year.

1. Each member of the Executive Board attending a regular meeting; other than one held during the State Convention; shall be reimbursed for necessary expenses.
2. A majority of the members of the Executive Board constitutes a quorum.

E. In the event an office (besides president) becomes open, the president shall (with approval of the majority of the board) appoint a successor who shall serve out the remainder of the term until the next FAMAT State Convention. In the event the position of president becomes vacant, the order of succession shall be parliamentarian then the regional directors in order of seniority. This person shall with the approval with the majority of the board appoint a successor to the vacant position. Both of these officers will serve until the next FAMAT State Convention.

ARTICLE VI: Amendments

This Constitution may be amended by the following procedure.

A. The amendment is presented in writing and distributed at the sponsors' meeting at the State Convention.

B. The amendment is approved by two-thirds of the present member schools at the sponsors' meeting. Each member school shall be given one vote.

ARTICLE VII: Parliamentary procedure

All matters of procedure not specified in this Constitution will be governed by the Revised Robert's Rules of Order.

ARTICLE VIII: Dissolution

If at any time the organization does cease to carry out the purposes as herein stated; all assets and property held by it; after payment of its liabilities; be paid over to the National Mu Alpha Theta.

ARTICLE IX: Date of Effectiveness

This Constitution will become effective immediately after being approved.

Last revised 19 April 2008. (updated July 2011; April 2017)

BY-LAWS

The following constitute the By-Laws of the Florida Association of Mu Alpha Theta. Changes to the By-Laws may be made upon recommendation and approval of the Executive Board.

A. Appointed Positions - The positions of Membership Chairman, will be appointed by the President with Executive Board approval for one year. At the end of the one-year term, an individual may again be appointed to the same position. The duties of the *positions shall be as follows:*

1. Membership Chairman:

a. Promote membership in the organization.

b. Assists the president in consequential matters.

2. The President may invite chairs of special committees to the Executive Board meeting with non-voting status and at the expense of the Association.

B. State Headquarters - state headquarters shall be established at the Treasurers address.

C. Regions - Regions for the organization shall be determined by the Executive Board.

D. Dues

1. Each member chapter shall submit to the state treasury dues on a scale as follows:

a. For clubs with 10 or less members a minimum $70.00 registration fee is required, due on November 1 or a late fee of $50 will be assessed.

b. For clubs with more than 10 members a registration fee of $7.00 per member is required, due on November 1 or a $50 late fee will be assessed.

2. These dues shall be used for:
   a. Expenses of the state organization.
   b. Cash awards to individual winners at the State Convention.
   c. Aid to the host school for convention/regional expenses.
   d. Aid to the winning Theta, Alpha, and Calculus teams at the State Convention to be used for participation at the National Convention.
   e. Travel expenses for the Executive Board as necessary.
   f. Any and all other Association business as may be deemed necessary for its successful operation.

7. Process to change Competition Rules

Proposals by non-Board members

Non-board members that desire to make a change to competition rules shall submit their proposal in writing to their Regional Director or any member of the Executive Board. The board member may, at their discretion, submit the proposal to the President for consideration.

Responsibility of the President

Considering proposed changes to competition rules is a presidential administrative duty specified by the Constitution. Therefore after due consideration, the President shall either socialize the proposal with the Executive Board, socialize the proposal in the sponsors forum, table the proposal until a later time, or decide against the proposal.

Sponsors Forum Socialization

When the President decides to socialize a proposal in the sponsors' forum, all sponsors are encouraged to share their opinions in the forum. While the sponsors won't vote, the

Executive Board members will read the comments and develop a better gauge of the thoughts and feelings on the proposal.

Following this socialization, the President shall socialize the proposal with the Executive Board, table the proposal until a later time, or decide against the proposal.

Executive Board Socialization

When the President decides to socialize a proposal in the Executive Board, all board members are encouraged to share their opinions. While the board members won't vote at this time, other board members will read the comments and develop a better gauge of the thoughts and feelings on the proposal.

Following this socialization, the President shall call for a vote of the Executive Board, socialize the proposal in the sponsor's forum, table the proposal until a later time, or decide against the proposal.

Executive Board Voting

A proposal to change competition rules shall only be approved by obtaining a majority vote of the Executive Board.

The Executive Board shall not be asked to vote without prior board socialization of the proposal.

It is the responsibility of the President to call for a vote.

A vote may occur either in person or by e-mail.

HISTORY OF FAMAT AND MATHEMATICS COMPETITIONS IN FLORIDA

In the spring of 1976, the Mu Alpha Theta chapter at Lake City High School, Lake City, hosted the first Florida Mu Alpha Theta convention. The chapter's sponsor was Patte Casey. The activities

of the conference included competitions in games such as Score Four, Mastermind, Hex, Helix, Backgammon, etc. There were an unknown number of schools in attendance.

The students and sponsor, Rose Reeves, at Hillsborough High School, Tampa, decided to repeat the convention experience the next year, 1977, by having the second convention. Again Games competitions took place, as well as a team competition.

The third convention took place in 1978 at Miami Coral Park High School, Miami, hosted by JoAnne Taber (Coral Gables Senior High School), Mary Elizabeth Sullivan (Miami Senior High School), and Hector Hirigoyen (Miami Coral Park High School). The team competition between schools involved two schools at a time responding to timed questions. Winners of each match worked through the competition tree until the first through fourth place teams were identified. There were two team levels, which became Alpha and Theta levels. The fourth competition was held in 1979 at Coral Springs High School (Barbara Nunn, sponsor). Besides the team and games competitions, the convention program included speakers, such as Zalmin Usiskin of the University of Chicago. A panel discussion on careers involving mathematics was also held.

The convention at Coral Springs was successful with over twenty-five schools in attendance. With the growth in the number of state Mu Alpha Theta chapters and conference attendees, it became obvious that there needed to be an organization to coordinate the state's Mu Alpha Theta activities.

Funds remaining from the Coral Springs High School Mu Alpha Theta convention were used to pay travel and housing expenses for a group to convene in May, 1979, to establish a Mu Alpha Theta state organization. At the Holiday Inn in Palm Beach Gardens the Florida Association of Mu Alpha Theta (FAMAT) was founded and a constitution was written by the following committee: Omis Avant, Key West HS, Key West; Sandra Clinger, Brandon HS, Brandon; Betty Lichtenberg, University of South Florida, Tampa; Fred Lundeen, Martin County HS, Stuart; Barbara Nunn, Coral Springs HS, Coral Springs; Rose Reeves, Hillsborough HS, Tampa.

The first officers of FAMAT serving until 1983 were: President - Omis Avant, Secretary/Treasurer - Barbara Nunn, Mu's News Editor - Sandra Clinger, Constitution - Rose Reeves.

Also in the spring of 1979, the first invitational mathematics competition was held at Martin County HS under the direction of Fred Lundeen. This competition initiated the mathematics competitions in Florida. At each level, Algebra I, Geometry, Algebra II, Advanced Math, and Calculus, students participated in team and individual competitions. In the team competition the exact order of answer submission was noted. The Kiwanis Club of Stuart helped sponsor this competition.

In the next year, 1980, Martin County HS hosted a similar competition. Coral Springs HS hosted a competition like the one at Martin County HS for Broward County Algebra I and Geometry students led by sponsors Fran McCreary and Diane Riley.

In 1981 the Coral Springs HS competition grew into a statewide invitational in the areas of Algebra I, Geometry, Algebra II, Advanced Math, Calculus, and Computers. Over the next few years competitions were held at North Miami Beach Senior HS (Helen Dostal), Riverdale HS, Ft. Myers High School (Ron Davis), Port Charlotte HS (Shirley Holm), Ft. Pierce Westwood HS (Christine Rodic), Palm Beach Gardens High School (Mary Kilpatrick), Tampa's Berkeley Prep (Thom Morris), South Fork HS in Stuart, and Port Charlotte HS (Eileen Harris).

In 1984, while in Tallahassee to serve on a Department of Education (DOE) committee, Ron Davis and Barbara Nunn were able to meet with Doug Crawford, DOE director of high schools. Renee Henry made the meeting possible. The purpose of this meeting was to seek DOE financial support to transport the mathematics competition concept, so widespread in South Florida, to the rest of the state. A $5000.00 grant was given by the DOE and, under the direction of Ron Davis, regional competitions were held in all five region of Florida in 1985. The grant moneys were used to send a team of experienced competition sponsors to work with those at the site of the new competitions. Three competitions were held as a direct result of the grant.

In August 1986, the National Mu Alpha Theta convention was held on the campus of the University of Miami, Coral Gables, Florida. The co-chairpersons were Helen Dostal (North Miami Beach Senior HS) and Fran McCreary (Coral Springs HS). The success of this conference was through the cooperative efforts of the FAMAT students and sponsors.

In August, 1989, the National Mu Alpha Theta convention was held again in Florida at the Hyatt Regency Hotel, Tampa, Florida. The co-chairpersons were Dave Steele (Plant City High School), Thom Morris (Berkeley Prep), and Ron Carroll, (King HS).

In August, 1992, the National Mu Alpha Theta convention was again hosted by a Florida school. This time however, the chairman, Thom Morris of Berkley Prep, arranged to have the convention at Princeton University in New Jersey.

The 1996 National Mu Alpha Theta convention was hosted by three Florida Schools. The co-chairmen, Frank Caballero of Miami Sunset Senior High School, A. Samuel Koski of Miami Springs Senior High School, and Robert L. Lundblad of Miami Killian Senior High School, hosted the convention on the campus of the University of Central Florida in the greater Orlando area.

The 2000 National Mu Alpha Theta convention was hosted by Dr. Thom Morris of Berkeley Prep School in Tampa, and Dr. David Steele of Plant City High School. The convention was held at San Diego State University in California.

The 2003 National Mu Alpha Theta Convention was hosted by three Florida schools. The co-chairmen, Susan Hiller of Vero Beach High School, A. Samuel Koski of Miami Springs Senior High School, and Thom Morris of Berkeley Prep in Tampa, hosted the convention at the Emory Conference Center Hotel in Atlanta, Georgia.

The 2006 National Mu Alpha Theta Convention was hosted by two Florida schools. The co-chairmen, Sue Doker of Lincoln High School and Dr. Thom Morris of Berkeley Prep High School, hosted the convention in Fort Collins, Colorado.

In 2007, Dave MacFarlane and Christine Brzycki from Palm Harbor University High School hosted the National Convention at the Grand Hyatt in Tampa.

In 2008, Thom Morris from Berkeley Preparatory School hosted the National Convention at the Capital Holiday Inn in Sacramento.

In 2010, Susan Hiller (retired Vero Beach) Brandi Williams-Hillard (Vero Beach) and Kim Woolfenden (Tampa Bay Technical) hosted the National Convention in Alexandria, Va.; "Red, White and Mu" was the theme.

Rob Snow from Deerfield Beach, Lisa Herron from Cypress Bay, and Brandi Williams from Vero Beach hosted the 2014 convention in Orlando.

Thom Morris from Berkeley Prep in Tampa, FL, Paul Kustos from Hoover High in Hoover, AL, and Theo Diamandis from Stanford University, who planned and ran the 2015 National Convention in Salt Lake City.

Kim Woolfenden and Sue Doker hosted the 2017 National Convention in Buffalo, NY.

Since 1989, the FAMAT board has assumed the duties of hosting the State Convention. The convention site was moved at that time to Grenelefe Resort and Convention Center just outside Haines City, Florida. Through a cooperative effort of the board and school Mu Alpha Theta sponsors, the State Convention has continued to grow. At the 1995 convention there were 1203 students and 152 sponsors (1355 total) from 62 schools in attendance. In 2002, Grenelefe Resort closed. The 2002 State Convention was held at the Wyndham Resort in Orlando. In 2003, the State Convention was held at the Radisson Hotel by Universal Studios in Orlando. In 2004, the name of the Radisson was changed to the Doubletree.

Annually there are three regional and three invitational (statewide) mathematics competitions held around the state. During the 1985

competition year over 12,000 students competed in these competitions.

FAMAT since its inception has strived to bring the enthusiasm, interest, and appreciation of mathematics to the students of Florida. The torch is carried and passed by the FAMAT sponsors and officers.

FAMAT STATE CONVENTIONS

	YEAR	CONVENTION SITE	SPONSOR
1st	1976	Lake City HS, Lake City	Patte Casey
2nd	1977	Hillsborough HS, Tampa	Rose Reeves
3rd	1978	Miami Coral Park HS, Miami	JoAnne Taber (Coral Gables SHS) Mary E. Sullivan (deceased), (Miami SHS) Hector Hirogoyen (Miami Coral Park)
4th	1979	Coral Springs HS, Coral Springs	Barbara Nunn
5th	1980	Brandon HS, Brandon	Sandra Clinger
6th	1981	Miami Coral Park HS, Miami	Frank Caballero
7th	1982	Robinson HS, Tampa	Jaon Byman
8th	1983	Lely HS, Naples	Bob Bushnell (deceased)
9th	1984	Leto HS, Tampa	Susan Hammer Diane Fernandez
10th	1985	Edison Community College, Ft. Myers	Ron Davis
11th	1986	Holiday Inn, Orlando	Thom Morris (Berkeley Prep)
12th	1987	Holiday Inn, Orlando	Jan Mazur (Brandon HS)
13th	1988	Holiday Inn, Orlando	Chris Rodic (Ft. Pierce Westwood)
14th	1989	Grenelefe Resort, Grenelefe	FAMAT Board
15th	1990	Grenelefe Resort, Grenelefe	FAMAT Board
16th	1991	Grenelefe Resort, Grenelefe	FAMAT Board
17th	1992	Grenelefe Resort, Grenelefe	FAMAT Board
18th	1993	Grenelefe Resort, Grenelefe	FAMAT Board
19th	1994	Grenelefe Resort, Grenelefe	FAMAT Board
20th	1995	Grenelefe Resort, Grenelefe	FAMAT Board
21st	1996	Grenelefe Resort, Grenelefe	FAMAT Board
22nd	1997	Grenelefe Resort, Grenelefe	FAMAT Board
23rd	1998	Grenelefe, Resort, Grenelefe	FAMAT Board
24th	1999	Grenelefe Resort, Grenelefe	FAMAT Board
25th	2000	Grenelefe Resort, Grenelefe	FAMAT Board
26th	2001	Grenelefe Resort, Grenelefe	FAMAT Board
27th	2002	Wyndham Palace Resort, Lake Buena Vista	FAMAT Board
28th	2003	Radisson Universal, Orlando	FAMAT Board
29th	2004	Doubletree, Universal, Orlando	FAMAT Board
30th	2005	Doubletree, Universal, Orlando	FAMAT Board
31st	2006	Doubletree, Universal, Orlando	FAMAT Board
32nd	2007	Doubletree, Universal, Orlando	FAMAT Board
33rd	2008	Doubletree, Universal, Orlando	FAMAT Board
34th	2009	Doubletree, Universal, Orlando	FAMAT Board
35th	2010	Doubletree, Universal, Orlando	FAMAT Board
36th	2011	Doubletree, Universal, Orlando	FAMAT Board
37th	2012	Doubletree, Universal, Orlando	FAMAT Board

38th	2013	Doubletree, Universal, Orlando	FAMAT Board
39th	2014	Doubletree, Universal, Orlando	FAMAT Board
40th	2015	Doubletree, Universal, Orlando	FAMAT Board
41st	2016	Doubletree, Universal, Orlando	FAMAT Board
42nd	2017	Doubletree, Universal, Orlando	FAMAT Board

FAMAT State Convention Division Champions

Theta Division	Alpha Division
1981 Riverdale HS	1981 Plant City HS
1982 Riverdale HS	1982 Riverdale HS
1983 Plant City HS	1983 Riverdale HS
1984 Miami Killian HS	1984 Riverdale HS
1985 Coral Springs HS	1985 Miami Killian HS
1986 Plant City HS	1986 Palm Beach Gardens HS
1987 King HS	1987 King HS
1988 Coral Springs HS	1988 Coral Springs HS
1989 Berkeley Preparatory School	1989 Coral Springs HS
1990 Plant City HS	1990 Bloomingdale HS
1991 Bloomingdale HS	1991 Plant City HS
1992 Cypress Lake HS	1992 Bloomingdale HS
1993 Stoneman Douglas HS	1993 Cypress Lake HS
1994 Stoneman Douglas HS	1994 Stoneman Douglas HS
1995 Stoneman Douglas HS	1995 Hillsborough HS
1996 Vero Beach HS	1996 Stoneman Douglas HS
1997 Vero Beach HS	1997 Stoneman Douglas HS
1998 Vero Beach HS	1998 Vero Beach HS
1999 Stoneman Douglas HS	1999 Vero Beach HS
2000 Stoneman Douglas HS	2000 Stoneman Douglas
2001 Community School of Naples	2001 Stoneman Douglas
2002 Stoneman Douglas	2002 Community School of Naples
2003 Stoneman Douglas	2003 Stoneman Douglas
2004 Stoneman Douglas	2004 Lincoln
2005 Buchholz	2005 Buchholz
2006 Buchholz	2006 Buchholz
2007 Buchholz	2007 Buchholz
2008 Buchholz	2008 Buchholz
2009 Lawton Chiles	2009 Buchholz
2010 Buchholz	2010 Buchholz
2011 Rickards HS	2011 Buchholz
2012 Buchholz	2012 Buchholz
2013 Buchholz	2013 Buchholz

2014 Buchholz	2014 Buchholz
2015 Buchholz	2015 Buchholz
2016 Buchholz	2016 American Heritage (Plantation)
2017 Buchholz	2017 Buchholz

Calculus Division	**Sweepstakes**
1985 North Miami Beach	
1986 Miami Sunset	
1987 Palm Beach Gardens	
1988 North Miami Beach	1988 King HS
1989 Coral Springs	1989 Coral Springs HS
1990 Coral Springs	1990 Coral Springs HS
1991 North Miami Beach	1991 Cypress Lake HS
1992 Gaither	1992 Cypress Lake HS
1993 Cypress Lake HS	1993 Cypress Lake HS
1994 Berkeley Preparatory School	1994 Stoneman Douglas
1995 Stoneman Douglas	1995 Stoneman Douglas
1996 Nova	1996 Stoneman Douglas
1997 Dr. Phillips	1997 Stoneman Douglas
1998 Stoneman Douglas	1998 JP Taravella
1999 Vero Beach	1999 Stoneman Douglas
2000 Vero Beach	2000 Stoneman Douglas
2001 Stoneman Douglas	2001 Stoneman Douglas
2002 JP Taravella	2002 Stoneman Douglas
2003 JP Taravella	2003 Stoneman Douglas
2004 JP Taravella	2004 Stoneman Douglas
2005 Stoneman Douglas	2005 Gainesville Buchholz
2006 Cypress Bay	2006 Gainesville Buchholz
2007 Cypress Bay	2007 Gainesville Buchholz
2008 Buchholz	2008 Gainesville Buchholz
2009 Buchholz	2009 Gainesville Buchholz
2010 Buchholz	2010 Gainesville Buchholz
2011 Buchholz	2011 Buchholz
2012 Buchholz	2012 Buchholz
2013 American Heritage (Plantation)	2013 Buchholz
2014 Buchholz	2014 Buchholz
2015 Buchholz	2015 Buchholz
2016 Buchholz	2016 Buchholz

2017 American Heritage (Plantation)

2017 American Heritage (Plantation)

FAMAT SANCTIONED ACTIVITIES

FAMAT sanctions Regional Competitions and Statewide Competitions, and hosts a State Convention.

Regional competitions are open to schools that are located within that regional area (see glossary). A school may attend a regional competition outside their region only if it has received prior approval by submitting a Crossover Form submitted to the **FAMAT** President by December 1. Approval for a crossover is given for hardship reasons only (i.e. excessive difference in travel distance). The writing of competition questions for Regional Competitions is coordinated through **FAMAT**. On the day of the Regional Competition, the same tests are used at all regional sites around the state.

Statewide competitions are open to all schools. At a Statewide competition the host school is responsible for all test writing. Students at the host school may not compete in the competition, unless given approval by the FAMAT Board.

Both regional and statewide competitions provide mathematics competitions for students that are presently enrolled in college preparatory mathematics courses. There are six divisions, Algebra I, Geometry, Algebra II, Statistics, Precalculus, and Calculus, in which students may compete. A student competes in the highest level in which they are presently enrolled or that they have completed, if no course above their last is offered at their school (see eligibility sheet). Students have only one year of eligibility in Algebra I, Geometry, Algebra II, and Statistics. The students compete in an individual multiple - choice test, and pre-selected students participate in the team round. Teams in each division consist of four (4) students or less if four (4) are not available. Students that will be competing on a school's team are declared at the time of the school's registration at each competition.

School teams may change from competition to competition. The process for the competitions is the same for both regional and statewide competitions. Changes in teams are not permitted once

the competition has begun. In each division the school's team score is added to the sum of the team members' individual scores to provide the school's final team score which is then compared to the other schools. Middle schools may compete in regional and statewide competitions under their own school name. Middle school students who attend a specific high school for their mathematics class must compete under the middle school name where their permanent record is held.

The annual **FAMAT** State Convention is open only to those schools that are full or associate members of **FAMAT** and only to the high school students of those schools who are **FAMAT** members. The State Convention provides a different format of competitions than that of the regional or statewide competitions. The convention program provides for a wide variety of specialty tests called Topic Tests. Some of these Topic Tests are limited to students who are enrolled in particular levels of classes. The students on one level may elect to try any test on that level or any level above it. However, a student may not attempt any test labeled as below their level. All students are registered in one of the three divisions, Theta (the level for students that are enrolled in Algebra 2/Geometry and generally the category for associate members), Alpha (the level for students who have completed Algebra 2/Geometry but who have not had Calculus), and Calculus (the level for students who are presently enrolled in, or have completed Calculus.) There is an individual and team competition in each division. The convention activities culminate with the final Awards Ceremony.

Over the past several years **FAMAT** has sanctioned a fall mail-in interschool test. This test is available online. Schools have one week to work on this test and the answers are to be postmarked one week from the beginning date. This interschool test has as its last task the creation of a logo for the state convention. The winner has their logo placed on the front of the State Convention t-shirt and receives two free State Convention registrations. The runner up will have their logo placed on the back of the shirts with the school names of those attending the Convention and receive one free State Convention registration. Another question on the

interschool test is to come up with the poster theme topic.

FAMAT also has three mail-in tests – the Susan Hiller for Algebra I students, the Barbara Nunn for Geometry and Algebra II students, and the Helen Dostal for any student who did not take the Nunn test. A dropbox link for these tests are emailed to FAMAT member schools if they have renewed their dues by November 1 of the current year. Only students at FAMAT member schools may participate. Students may take ONLY one of these tests on the given day, which is a Wednesday the first or second week of December. Trophy plaques are awarded at the State Convention for the top 3 schools.

FAMAT Executive Board 2017 - 2018

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DO NOT SEND ANYTHING "special" delivery. It WILL NOT be picked up from the post office.

FAMAT Executive Board 2017-2018

(con't.)

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PART II

HOSTING A COMPETITION

PREPARATION AND PROCEDURES

I. Before the Competition

A well-run competition with a successful registration process depends on the planning, which takes place well before the contest. Planning for the registration includes:

A. The Invitation and Information

1. A generic invitation is included in the FAMAT Sponsor's Competition Reference Guide which is posted on floridamao.org.
2. All information pertinent to the competition you are hosting, regional or Statewide, is to be included in the application to host a competition. This includes the host name, where to mail the registration forms (included in the Sponsor's Guide), etc.
3. About a month or two before the competition you are hosting, any specific information not included in the sponsor's guide should be posted to the FAMAT list serve. Items to include: driving directions to your school; list of area motels, prices, and phone numbers; tentative schedule of events; explanation and rules for special events such as a computer contest, a school wide contest, etc.; be sure to include the postmark deadline for the competition. Additionally, hosts MUST post this information on-line at floridamao.org under the Manage Competitions link. Include any specific instructions you want other schools to know about.

B. Registration Forms

1. As the registration forms are received from each school, a running account of the schools should be kept on a spread-sheet or on the master registration list included in this guide.

Each participating school's registration may be retrieved on-line.
2. One week before the contest, a list of registrations received and the amount of money should be posted to the FAMAT list serve. The subject of the email message should be "Region III" or the appropriate heading. Those owing money should be reminded.
3. All envelopes showing late registration postmarks should be saved for the on-site registration center as evidence for late fees.

C. The Program

1. The program should be printed as soon as possible.
2. It should have a cover designed by the hosting school.
3. It should include a schedule of events including location (building and room number). **Note the common testing schedule given in the Sponsors' Quick Reference Guide.**
4. It should include a list of participating schools.
5. It should include a map of the school, location of sponsors room, dispute center, restrooms, and local acknowledgements.

D. Preparation of Signs

1. Prepare the signs for on-site location to help participants find their way.

E. Preparation of on-site registration packets

1. Before the contest, a registration packet for each school is to be prepared. The packet will be labeled with the school number and school name.
The packet will contain:

a. Programs for each student
b. Evaluation form, with a note to fill it out during the day and return it at the end of the awards ceremony.
c. Map and/or list of local fast food places and/or mall location.
d. Receipt for registration fees.

F. The Sponsor's Room

Sponsors are an essential part of each competition. A room should be provided for them with restrooms and soda machines nearby if possible. Donuts/bagels/pastries, fruit, juice/water/coffee/sodas should also be provided.

G. Suggestions

1. Remember that students will be seeing your campus for the first time. For a successful contest, it is important for all of the students to arrive at each event on time. It is essential that the registration center, dispute center, sponsors room, test rooms, and team competition areas are well marked with pre-made signs.
2. Notify the fast food places in your area of the event so they can be prepared with enough workers.
3. On the Monday before the competition, post to the list serve the list of schools that have registered, money owed, number of students registered. The subject of the email should be the Region # so only schools from that region will read the message. If it's a Statewide, use the school name.

II. The Day of the Competition

A. Before registration begins, post all signs. (Preferably the night before)

B. Set up Sponsors Room

C. At the registration center

1. Pre-made registration packets
2. Have extra forms, programs, and for sale – NCS answer sheets and pencils
3. Envelopes of late postmarked registration forms.
4. Cash box with change and receipt book.
5. A minimum of 5 people to operate the registration center
    a. Person 1 – hand out pre-made packets, if the school does not have a pre-made packet, then the sponsor will be given a registration form to fill

out. Once completed, he/she will then receive copies of the necessary extra forms.

b. Persons 2 and 3 – will collect computer sheets and take them to the scoring room at the end of registration

c. Persons 4 and 5 – update master registration list, give out receipts, collect incoming money and give out refunds (upon the decision of the hosting school)

d. Have a speed registration line for schools who have no changes to their registration

6. The registration center needs to stay open as late as possible to register those schools that might arrive late. However, the competition must start on time. Although the registration center may admit late schools, those schools' students may not have as much time to complete their testing as the other students.

SUGGESTIONS

The following list contains some collective thoughts for you to think about and to use in order to make your competition run smoothly.

A. Before the Competition

1. Go over the checklist (provided in the competition forms appendix) to familiarize yourself with procedures as they are outlined in the guide.
2. Call nearby food establishments to notify them of the date of the competition and possible number of participants.
3. If possible, obtain the use of several walkie-talkies.
4. Plan on running off 240 copies for big regions and 150 copies for smaller regions copies of each individual test for each testing division, though be sure to check the on-line registration of participating schools for appropriate numbers of copies. Generally, you should print 10% extra for each test.
5. Run off team questions. Either 4 of each questions stapled together to pass out to each team OR questions collated 1-15 for each student.

6. Run off copies of the sponsor's packets for each division. Each of these packets can include the individual test, individual test solutions, team questions, team questions solutions, and a list of all answers OR a CD burned with this information. You will need one for each school. If you choose not to do this, all tests and solutions will be on-line at floridamao.org by the Monday following the competition.
7. Plan on a 1.5 hour time slot in the schedule for the individual testing and team sessions with a 15-30 minute passing time.
8. There are three individual tests in each of the two testing sessions. Algebra 1, Precalculus and Calculus are in the first round, with Geometry, Algebra II and Statistics in the second. The time schedule is in the Sponsors' Guide.
9. At the end of the last session, plan a 2 – 2.5 hour time block for compiling the results.
10. Sponsor packets should be made up and include the results of the competition. All tests are being put online and do not need to be printed for the competing schools. Some hosts are charging for paper copies of the results.
11. On the day of the competition, NCS multiple choice answer sheets are to be stuffed into the sponsor packets.
12. Results for all competitions (if you want to).
13. Clearly post signs.
14. Consider giving every student a certificate of participation.
15. Run off dispute forms for dispute center.
16. Prepare schedule for workers.

B. At the Competition

1. Have plenty of scratch paper on hand.
2. Have a pencil sharpener available at all testing sites.
3. Use football down markers, or computers to display countdown timer to keep track of minutes in the team competitions.
4. Have a person knowledgeable for that specific test area at each level.
5. Use cell phones or walkie talkies for easy communication.

6. Have one person in charge of handing out tests and receiving answer sheets.
7. Collate and staple 2 sheets of scrap paper to the back of each individual test.

C. After the competition.
1. Acknowledge sponsors at the awards ceremony.

AWARDS

The competition chairperson should order the following awards approximately six weeks prior to the contest. The guidelines represent the **minimum** number of awards to be presented.

I. Individual Awards
A. Statewide Competition
1. Trophies for the top 15 places
2. Certificates of participation are recommended.
B. Regional Competition
1. Trophies for the top 10 places
C. State Convention
1. Trophies for the top 25 places in the three individual tests: Theta, Alpha, and Calculus

II. Division Awards
A. Statewide Competition
1. A team trophy for places 1 – 5
2. Ribbons, trophies or medallions for each team member
B. Regional Competition
1. A team trophy for places 1 – 3
2. Ribbons, trophies or medallions for each team member
C. State Convention
1. A team trophy for places 1 – 10
2. Ribbons, trophies or medallions for each team member
3. $1000 for travel to the national convention for each divisional winner

III. Sweepstakes Award

A. Statewide Competition

1. Trophies for places 1-5

B. Regional Competition

1. Trophies for places 1-3 or 1-5

C. State Convention

1. Trophies for places 1-10

IV. Additional Awards for the State Convention

A. Topic tests - Trophies for places 1-20

B. Interschool test - Trophies or plaques for places 1-10

C. Scrapbook - Trophies for places 1-10

D. Poster – Trophies for places 1-10

E. Relay – Trophies for places 1-10,
ribbons/trophies/medallions for each team member

F. Computer – Trophies for places 1-10,
ribbons/trophies/medallions for each team member

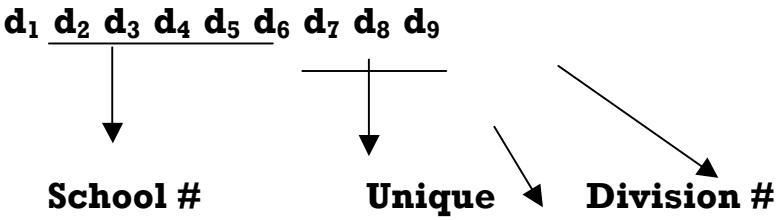
G. Hustle – Team trophies for places 1-10,
ribbons/trophies/medallions for each team member

V. The competition chairperson should proofread all trophies and ribbons, for accuracy, at least two weeks before the competition.

Instructions for Creating Student ID #s
AND
Enrolling Students Online at floridamao.org

To enroll online, go to floridamao.org and log on the first time using your 4-digit school ID number (your ID number from last year followed by the digit "0") and your password from last year. If your school is new to FAMAT, a middle school, or a school with a new ID number, e-mail The Technology Coordinator at floridamao@gmail.com after you have registered via mail for your ID number. Give Brian a week after you mail your membership registration before enrolling on-line if you suspect you will have a new ID number.

Each student ID # must consist of 9 digits. The digits are defined as follows ("d" means digit) :



Let $d_1d_2d_3d_4d_5d_6d_7$ d_8d_9 be a student ID #.

d_1 will be the Region number in which your school resides (1, 2, 3, 4, or 5)
$d_1d_2d_3d_4$ will be your school number. $d_1d_2d_3$ will remain the same for most high schools with d_4 as zero.
$d_5d_6d_7$ is a students' unique number. No two of your students should have the same number in these positions to avoid scoring problems.
d_8 is the division number. Students are placed in divisions by their current mathematics class. Use the following numbers:

Algebra I	**1**
Geometry	**2**
Algebra II	**3**
Precalculus	**4**

Calculus 5
Statistics 6

d_9 is the team number a student is on. A last digit of "0" means the student is competing as an individual (not on team), "1" means the student is on team one, and "2" means the student is on team two.

Students competing in the Statistics division must be asigned two ID numbers. The Statistics ID number will have 6 as the eighth digit. The second ID number is for the other division the student is eligible for. The Statistics number will not be used at the State Convention. Students paying for two individual tests at a Regional or Statewide need to use the appropriate ID number for each test.

For example, John Smith is a first team Calculus student at Chilis High School, which has a school ID of 1810. John's ID number is 181000151.

Mary Jones is an individual Algebra I (not on team) student from Chilis High School. Her ID number is 181012310.

Sample printout of FAMAT student ID #s from floridamao.org

Student Name	Division	FAMAT ID (Team 1) ID	Team2 ID	Individual (No Team) ID
POZZUOLI, EMILY	Geometry	181000121	181000122	181000120
WEITZEL, KRISTINA	Geometry	181000221	181000222	181000220
YAN, JAMES	Geometry	181000321	181000322	181000320
JIANG, MARSHALL	Algebra 2	181000431	181000432	181000430
KIM, JOSEPH	Algebra 2	181000531	181000532	181000530
WANG, LINDA	Algebra 2	181000631	181000632	181000630
DUNN, WILLIAM	Precalculus	181000741	181000742	181000740
PACE, RYAN	Precalculus	181000841	181000842	181000840
ZHANG, SHUYAO	Precalculus	181000941	181000942	181000940
KIM, CAROLYN	Calculus	181001051	181001052	181001050
LANGSTON, JERROD	Calculus	181001151	181001152	181001150
LANGSTON, JERROD	Statistics	181001161	181001162	181001160

****Note that Langston, Jerrod is enrolled in both Calculus and Statistics.**

FAMAT ANSWER SHEET BUBBLING INSTRUCTIONS

When competing, at registration you must turn in

1. **school enrollment form**
2. **printout of on-line registration with competing students' names highlighted OR bubbled student enrollment forms for each student competing**

In addition, all students must have a bubbled answer sheet.

These are the directions for filling out the NCS forms.

1. School Enrollment Form - Use a student enrollment form from NCS, form 76260. The school ID sheet will be bubbled with the 4-digit school ID # assigned by FAMAT and the school name. If you are not a FAMAT member, contact the host school for a number. If your region is seating two teams, you will need to fill out a second school enrollment form for the second school number. These should be ready to hand in at the registration site. Each name and number should be left justified.

2. Student Enrollment Forms – are not to be used any longer. Students who are competing must be registered on-line at floridamao.org. In the rare event a student who competes is not registered on-line, the name of that student and their ID number must be reported to the competition scorer before the competition begins.

3. Student Answer Sheets - Everyone must do this whether you enrolled online or not. Each student must have an NCS answer sheet form 19641 or Accu-Scan #25220-TR-11/00 with their ID# written in AND bubbled, left justified, name in the name blank, division in the subject blank, school name in the date space. The ID# should be the one on the student enrollment form or from the online enrollment printout appropriate for the student.

4. 9th digit of the ID# - If a student is a member of a school's first team, that ID number will end in "1". A student on a school's second team (if the competition sits a second team), that ID number will end in "2". If a student is not a member of any 4-member team, the 9th digit should be a 0 and the first 4 digits of that student's ID# should be the school number that begins with a 1, 2, 3, 4, or 5.

5. Statistics Division students not on team must use their Statistics ID number when taking the Statistics Individual test and their other

division ID number when taking their other individual team. If on team, the student should use their Statistics ID number.
6. <u>Order NCS forms</u> by calling 800-367-6627, answer sheet form 19641 and school Enrollment sheets form 76260. You may order the Accu-Scan #25220-TR-11/00 answer sheets from Apperson Print Management Services by calling 800-827-9219. The costs are in the neighborhood of $40 for a box of 500 sheets plus shipping.

FAMAT ELIGIBILITY CHART FOR COMPETITIONS

Students competing must be enrolled in Algebra I or higher. Eligibility for students in Algebra I, Geometry, Algebra II, and Statistics is one year each. The chart below outlines the tests students in each course may take.

Regional, Statewide Divisions and State Convention Divisions

Course presently enrolled in	Alg I	Geo	Alg 2	Pre-calc	Calc	Stats		Theta	Alpha	Calc
Algebra I	*	*	*	X	X	X				
Geometry and/or Algebra II ***		***	***	X	X	X		X	X	X
Precalc				X	X	X			X	X
Calculus					X	X				X
Statistics	X **	X **	X **	X	X	X				

<u>NOTE:</u> Students who have previously competed in Statistics are no longer eligible to compete in Statistics. Students who have never

competed in Statistics may do so whether or not they are currently enrolled in Statistics.

***Length of eligibility is 1 year for each of Algebra I, II, and Geometry, after which time the student will move to the next highest division.**
**** Students enrolled in Statistics and no other math class who have completed Algebra II/Geometry, but no higher math class and never competed in Algebra II/Geometry, may compete in Algebra II/Geometry while enrolled in Statistics.**
***** Any student enrolled in or having completed Algebra II and/or Geometry may compete in Algebra II or Geometry or both in the same season. However, there is a one-year eligibility in each division, and all other eligibility rules are still in effect.**
******At Regional and Statewide competitions students may take two individual tests as long as at least one of the tests is Statistics, Precalculus, or Calculus. Under no circumstances may a student test down.**

<u>Eligibility for FAMAT State Convention</u>
Schools attending the state convention must be current members of National MAΘ and FAMAT. Only students who are full or associate member of both organizations can attend the State Convention. See glossary for definition of full and associate members.

Theta – full or associate members who are enrolled in Algebra II and/or Geometry
Alpha - full members who have completed Algebra II and Geometry but are not enrolled in or have completed Calculus
Calculus - open to any full member

TEAM COMPETITION ANSWER SHEETS

1. In the appendix of competition forms is one form that contains four (4) team answer sheets.
2. These are the sheets that you can use as official answer sheets for the team competition (or you can make ones that are unique to your contest). A computer program that

helps keep score is on-line at floridamao.org.

3. How to use:

a) Suppose you want to make enough answer packets for a sessions of 30 teams.

b) You will need 450 answer sheets, i.e. 30 teams x 15 answer sheets per team

c) Make at least 114 copies of this form, i.e. 4 per form x 114 copies = 456 answer sheets

d) Group 15 forms together; staple 4 times, once each by the word "Division."

e) Use a paper cutter and cut through the stack of 15 forms, 3 times to make 4 sets of team answer sheets

f) Continue the above procedure until the 30 sets are completed.

PERSONNEL ASSIGNMENTS AND PROCEDURES

I. Each hosting school is responsible for providing all personnel for running their regional or Statewide competition.

A. You will need to provide one proctor per individual test site.

B. You will need to provide at least one aid to circulate among those individual testing sites to locate any problem areas.

C. You will need to provide an emcee and microphone at each team testing site.

D. You will need to provide two scorers for each division and one timer at each team testing site.

E. You will need one 'spotter' for every six teams and one 'runner' to pick up the teams' responses from the 'spotters' at each team testing site. The 'runners' carry the responses from the 'spotters' to the scoring table for grading and recording.

II. Procedures Prior to the Competition

A. An envelope should be prepared in advance for each individual testing site (usually a classroom). That envelope should be clearly labeled with the room number and division.

That envelope should contain:

1. Individual tests for each seat in the testing site plus five extra copies for the possibility of defective tests.
2. Scratch paper (usually 2 - 3 sheets per seat).
3. Pencils (for sale or not)
4. Pencil sharpener.
5. Clock or timing device.
6. Manila envelope to collect the NCS sheets in. This envelope will be transferred to the scoring room after all disputes have been settled.
7. A sample answer sheet for the proctors.
8. Written instructions for the proctor to read.

B. A box should be prepared in advance for each team testing site. That box should be clearly labeled with the site number and division. That box should contain:

1. The questions rubber banded together. For example: team question number 1 should be stapled into 50 (# of teams) sets of four questions each and then rubber banded together OR have a packet of questions 1-15 stapled together one for each competitor. This method takes more preparation before the competition, but questions don't need to be handed out for each time question time period.
2. Answer sheet packets stapled together in sets of 15 (one set of 15 for each of the teams competing).
3. Scoring folder to include:
   a. A scoring form stapled to the inside of the folder. This form should include the names of the pre-registered schools.
   b. An answer sheet stapled to the inside of the folder.
   c. A cover sheet for the answer sheet.
   d. A separate folder a copy of the questions, detailed solutions of each question to be used
   e. Written instructions for the lead proctor to read.
   f. Scratch paper.
   g. Scoring pencils
   h. Pencils or pens for the 'spotters'

i. Dark construction paper for each table for the questions to be put under, if questions will be passed out one by one. If using folders to put all questions out at once, be certain of the order of the questions.
j. Timer and timing cards.
k. Pencil sharpener.

III. At the Individual Testing Sites (Individual Instructions are at the end of this section.)

A. Have the proctors pick up the envelope of prepared materials for their rooms from a secure and central location. This location will most likely be the scoring room or the registration center.

B. Proctors are to read the Instructions for Proctoring Individual Tests included in this document.

C. After collecting all answer sheets, read the multiple choice answers OR post in a central location.

D. Carefully collect all of the NCS answer sheets and place them in the manila envelope.

E. Collect all excess materials and place them in box and deliver it to the scoring room. Alternatively, extra tests may be collected during the testing time and brought to the Sponsors' Room.

F. Take the manila envelope to the scoring room.

IV. At the Team Testing Sites (Team Directions are at the end of this section.)

A. Proctors should pick up the prepared box of materials from the central location and take it to the team testing site.

B. Cover sheet, scrap paper and answer packets should be provided for each team as they arrive at the site. (Some schools have that material already on the tables waiting for the students).

C. As the students are seated they should begin to fill in their schools names and id #s on all of the official answer sheets.

D. When all of the teams have arrived, roll should be taken.

E. Add any school whose name was not called to the bottom of the score sheet.

F. If second teams are seated (according to the rules) make sure that two teams from the same school are not sitting near each other. Also make sure that those answer sheets are distinguished by team #1 or team #2. Make sure that both teams are listed on the score sheet.

G. Have the lead proctor read the written instructions at this time. (See team proctor instructions at the end of this chapter).

H. Have spotters pass out the first question being certain to place the question under the cover sheet. Also be very careful that team members never see the question as you are passing it out.

I. Students should be informed not to remove the staples or tamper with the cover sheet in any way prior to the onset of the question.

J. Spotters are to pick up response sheets from their assigned areas and record the minute during which the response was submitted on the back of the answer sheet. They should retain those answer sheets until a runner picks them up. Make sure that the answer sheet is kept folded so that no answer will be visible to another team.

K. The runners are to pick the answer sheets up from the spotters and take them up to the scorers' table.

L. After the end of the fourth minute and when all answers have been submitted, the emcee should read the correct response.

P. Spotters should begin to pass out the next question and the above procedure should be repeated. Do this immediately in order to save time.

Q. Sponsors and/or spectators may receive a question only after it has been used and completed.

R. Subtotals should be read every four questions and at the end of the last question.

S. Notes to scorers of the team competition:

1. As response sheets reach the scoring table, they should be graded and separated in two piles: correct and incorrect.
2. When all responses are in, graded, and separated, the correct responses should be ordered according to minute.

3. Points should then be awarded for each question as follows: 16 points for the minute of the first correct response, 12 points for the minute of the second correct response, 8 points for the minute of the third correct response, and 4 points for the minute of the fourth correct response (not to exceed 4 minutes).
4. The above procedure is known as the 'sliding scale', because a fourth minute response could receive '16 points' if it is the first correct response.
5. When all points have been recorded, rubber band the responses together (correct separated from incorrect), write the question number on the top, and save those responses for future reference or dispute.

T. At the end of the testing session, remind the students to clear their tables of all paper except the cover sheet.
U. Check and recheck the final scores and read them aloud.
V. All responses should be carefully repacked in the box to be returned to the scoring room for future reference.
W. Score folders should be immediately secured along with the box and delivered to the scoring room for entry into the computer

Mu Alpha Theta
Proctoring Instructions for Individual Tests

Read 1. This is the _____ individual test. No two students from the same school are to sit adjacent to each other.

Do 2. Students should enter the room with their NCS answer sheets with the 9-digit ID# already bubbled. When it is time to begin the test, start reading #3.

Read 3. In the *NAME* blank of the answer sheet you should print your name. In the subject blank, print the proper division name: Algebra I, Geometry, Algebra II, Statistics, Precalculus, or Calculus. In the date space, print your school name - no abbreviations. Be certain

your ID# is correct, left justified, and bubbled properly. The first four digits should be your school number, digits 5-7 are your unique student number for your school, the 8th digit is your division, and the 9th digit is your team number. Remember, misbubbling your ID number can lead to your disqualification.

Do 4. Walk the aisles and check to see that the ID numbers on scan sheets are filled in while at the same time checking improper seating among students by checking their school names. Students may come in up to 10 minutes late; however, their testing time ends at the time set for everyone in the testing room.

Read 5. The following are the directions for taking this test:

a. You may not leave this room until the testing time of one hour has been completed.

b. Headphones, beepers, cell phones, or electronic devices, watches (including calculators except for Statistics students) are not allowed.

c. Sunglasses and hats are not to be worn.

d. In the Algebra I, Geometry, Algebra II, Precalculus and Calculus divisions, students may not use any calculators. On the Statistics test, students may use any calculator without a QWERTY keyboard.

e. At the end of the testing session, you are to hand in only the NCS answer sheet. You may write on the test. Use the blank pages for scratch paper. You may keep your copy of the test.

f. Ties will be broken by the sudden death method beginning with question #1. Ask your sponsor about this method if you do not know what it is.

g. The scoring will be 4 times the number of questions you answer correctly minus one point for each incorrect response. A response that is left blank will count as zero points, but will not count as an incorrect response.

h. Answers will be posted (read) at the end of the test.

i. The dispute center will be held open 15 minutes after the test is over. You should know your school # and your ID#.

j. There will be three warnings for the end of the test: at the 15, 5, and 1 minute marks.
k. Proctors will not answer any questions, explain, correct, or clarify in any way any part of this test. Proctors will only be able to exchange a defective test.
l. If you need the proctor's attention, please stay seated and raise your hand. The proctor will come to you.

Read6. Please listen carefully to the clarification of unique test item issues.
a. If a student believes a test item is defective, select E. NOTA and file a dispute explaining why.
b. In the case that a question has multiple correct answers, all correct answers will be counted as correct. DO NOT select E) "NOTA". This applies even if one of the answers is in a more simplified form than another. If your answer is (is not) one of the choices, write a dispute explaining why your answer should also be accepted.
c. If AN ANSWER CHOICE IS NOT COMPLETE choose E) "NOTA." For example, when solving a quadratic where there should be two solutions, a choice providing only one solution should NOT be chosen. On the other hand, if a questions asks for "A solution … " a choice providing only one solution would be correct.
d. The phrase "two numbers" is to be interpreted as allowing for two numbers to be equal. The phrase "two distinct numbers" means find two different numbers.
e. If a student files a dispute claiming what the dispute center believes is a unique or highly unusual interpretation of the problem, the dispute center may award that student credit while allowing the intended answer for all other students.
f. Students should select E. "NOTA" ONLY if they believe either there is no correct answer or the question is seriously flawed.
g. Unless a question asks for an approximation or a rounded answer, give the EXACT answer.

Read7. Please clear your desk, of everything except your answer sheet, and your writing instruments. Do not open

_____ the test until you are instructed to do so.

7a. Statistics students can have a calculator on their desk as well. No calculator covers may be on the desk.

Do 8. Distribute the tests, one to each student.

Read 9. Are there any questions? You have 60 minutes to work. Begin.

Do 10. Write ending time on the board.

Do 11. As students are working, circulate occasionally to keep kids alert.

Do 12. Give the 15, 5, and 1-minute warnings when appropriate. At the end of the 60 minutes working time:

Read 13. Time is now up. Please put all pencils down.

Do 14. Have students pass the NCS answer sheets to the front and place them in the manila envelope.

Read 15. Please deposit any garbage in the garbage can as you exit the room. Answers Will be posted in the _____ area. OR

(Read the answers provided to you or send the students to the designated location to see the answers.)

Do 16. Take the manila envelope to the scoring room and check for your next assignment.

Thanks for helping! Your time is greatly appreciated.
Contact method in case there is a problem:

Mu Alpha Theta
Team Proctor Instructions

Read 1. **Fill out all 15 answer sheets completely. Remember to write your school name, school ID number, and your team number. Do not use abbreviations.**

Do 2. **Take roll.**

Read 3. **The following are the directions for answering the team question:**

a. **You will have 4 minutes to answer each question.**
b. **The scoring will be: 16 points for a correct response in the 1st minute, 12 points for a correct response in the 2nd minute, 8 points for a correct response in the 3rd minute, 4 points for a correct response in the 4th minute. A sliding scale will be used.**
c. **Once your hand has been raised with the answer sheet, it must stay up. If you put your hand down, your answer will be disqualified for that question.**
d. **Your answer must be submitted on the official answer sheet that has been correctly filled out. Otherwise your answer will be disqualified.**
e. **Your answer must be in the specific form that the question asks for.**
f. **If not otherwise noted, the answers should be in one of the following generally accepted forms:**
    - **denominators rationalized**
    - **simplest radical form**
    - **fractions, improper fractions, or mixed numbers in simplest form**
    - **equations should have integral coefficients if in standard form**
g. **No units are necessary**
h. **Calculators are not allowed in any division except Statistics. Statistics participants may use any non-qwerty keyboard calculator.**
i. **Headphones, beepers, cell phones, or electronic devices are not permitted.**

j. Sunglasses and hats are not to be worn during the competition.

Read 4. There will be a total of 12 questions during this team competition.

Read 5. Subtotals will be read after the 4^{th}, 8^{th} and 12^{th} questions.

Read 6. Disputes will be handled in the dispute center for 15 minutes after the end of This session.

Do 7. Have runners pass out folders of questions unless they are already on the table. As they are doing this continue reading.

Read 8. Do not open these packets or remove questions from the packet until I give the signal. Any team removing questions before the signal will be disqualified from this competition.

Read 9. Is there any team that does not have a folder of questions?

Do 10. Get ready to set the timer.

Read 11. Remove question # XXX. Begin. (Do this in succession – do not give competitors time to "play" with the questions once they are removed from the packet.)

Read 12. Begin minute 2.

Read 13. Begin minute 3.

Read 14. Begin minute 4.

Read 15. 15 seconds.

Read 16. Stop. Are all answers in?

Read 17. The answer to question # XXX is _____.

Do 18. Repeat steps 7-17 for each remaining question.
Announce scores after questions 4 & 8.

Read 19. Students, clear your tables of all paper except the folder.
Deposit trash in the cans provided.

Read 20. Final team totals are as follows:

SCORING

I. Before the First Testing Sessions Begins

A. Download student files from floridamao.org and follow directions to load these names and numbers into the scoring program.

B. Collect all registration sheets and send them to the room designated for the scoring room.

C. There will be two types of registration sheets

1. Individual – name and ID# (only if students were not enrolled online)

2. School – name and ID #.

D. Follow NCS instructions for the setup of the scoring equipment and feed sheets accordingly.

II. Scoring of the Individual Tests

A. Feed answer sheets for one division at a time, following the NCS instructions BEFORE disputes have been finalized. Change answer keys as accepted disputes come to the scoring room.

B. Print out all scores.

C. Copy and stuff all results into the sponsors' packets (host discretion)

III. Scoring of the Team Competitions

A. Points will be award on the 16, 12, 8, 4 method using the sliding scale – this is for all divisions except for Algebra 1 and Geometry.

B. There is no sliding scale for Algebra 1 and Geometry team. The scoring for Algebra 1 and Geometry divisions are scored as 4 points each part in the first minute, 3 points each part in the second minute, 2 points each part in the third minute, and 1 point each part in the fourth minute.

C. See the procedures governing this event.

D. Use the form provided for recording the scores.

E. At the conclusion of the team competition, the scoring folder is to be taken to the scoring room where the scores are to be entered into the computer.

F. Results are to be printed out, copied, and stuffed in the sponsors' packets.

IV. SCORING THE DIVISION:

A. The computer program will automatically determine the ranking and score for this award.

B. It will add the four team members' individual scores and the team score together.

C. The highest number of points will win first place.

D. For ties at this level see the 'rules'.

E. Follow NCS directions to print out these results.

F. Copy and stuff into sponsors' packets.

V. SCORING THE SWEEPSTAKES AWARD:

A. The computer program will automatically determine the ranking and score for this award.

B. It will add the highest four division scores together to determine the overall school ranking.

C. For ties at this level, see the 'rules'.

D. Follow NCS directions to print out these results.

E. Copy and stuff into sponsors' packets.

VI. AFTER THE AWARDS CEREMONY

A. Upload the standings data to floridamao.org.

THE AWARDS CEREMONY

1. The awards ceremony should be held in a room large enough to accommodate all of the students and sponsors who attend the competition. Usually the gym is used due to its versatility, though the cafeteria or auditorium can also be used.
2. The ceremony should begin promptly at the time published in the competition program.
3. If the ceremony begins on time, schools should be asked to remain for the entire program.
4. If the ceremony is going to be delayed, the visiting schools should be notified as soon as possible and as often as necessary.
5. An official from the school system or the principal of the sponsoring school should be invited

to participate in the passing out of the awards.

6. Contact the local news media prior to the competition to invite them to attend the competition and/or the awards ceremony.

7. The awards, ribbons and trophies, should be set up prior to the ceremony in full view of the participants.
8. If possible, use a stage or a platform and a microphone for the presenter, so that he/she can be easily seen and heard.
9. At least two students or sponsors should be stationed with the trophies to pass them out as the presenter calls out the names.
10. See rules chapter for any tie breaking procedures.
11. For the individual awards:
    A. Ask for the audience to hold their applause until each award is presented.
    B. Call all students that will be awarded down to the front. As specified on the awards
    ceremony list which can be printed from the scoring program.
    C. When they have been assembled, the presenter may begin to call out the awards from last place to first place, announcing as follows:
        i) place ii) score iii) school iv) name.
12. For the division awards:
    A. Ask for applause to be held until the awards are given out.
    B. Call the winning teams down to the front in order as specified on the awards ceremony list which can be printed from the scoring program.
    C. Call out awards from last to first place as follows:
        i) place ii) score iii) school.
13. For the sweepstakes award:
    A. Call for a representative from each winning school to come down front.
    B. Call them down in alphabetical order.
    C. Call out awards from last to first place as follows:
        i) score ii) school.
14. The order of the awards should be:
    A. Individuals and then teams from the same division;
    B. Divisions in the following order:
        i) Algebra 1 ii) Geometry iii) Algebra 2 iv) Precalculus
        v) Statistics vi) Calculus
    C. The sweepstakes should be the last award given out.
15. Prior to announcing the sweepstakes award, announce that a sponsor from each school should pick up the sponsor packet and drop off the evaluation form.

16. Be sure to ask the students to give a special thank you to their sponsors.

POST-COMPETITION RESPONSIBILITIES

1. E-mail the results generated from the scoring program to The Technology Coordinator at floridamao@gmail.com, Part of the scoring program does this for you.
2. Make sure to mail out any final results that may be necessary, within 1 week.
3. Finalize any awards or mistakes within 1 week.
4. If you wish for the executive board of FAMAT to send out a positive letter of recognition about the winners, then the names of those people who are to receive that letter are to be send to the Board. This list of names might include, the school board, the principal, the math supervisor, the department chair, etc.
5. Send the per registrant fee to the FAMAT Treasurer within two weeks after the competition.

RULES

1. For Statewide competitions, students of the hosting school may not compete, unless given permission by the FAMAT Executive Board.

2. For Regional competitions, students of the hosting school may compete.

3. The students of the hosting school of a Statewide should "run" the competition. The students are not encouraged to write complete tests but only perhaps to help in the development of tests. The hosting sponsors are responsible for the quality and accuracy of all test questions. All tests must be edited by FAMAT test editors.

4. No division team can be made up of students from more than one high school.

5. Middle school students must compete under the name of the school that holds their permanent record regardless of where the mathematics class is taken.

6. The individual test will be a 30 question multiple choice exam lasting one hour. The multiple choices will be A-E with E being "NOTA" meaning none of the above answer is correct.

7. The scoring system for the individual test will be: the number of correct responses times four, minus one point for each incorrect response. A response that is left blank will not count as an incorrect response.

8. If a team has less than four members, then each of the missing members will receive an individual score of zero.

9. The scoring system for the team competition will be for all divisions except for Algebra 1 and Geometry:
   a. 16 points for a correct response in the first minute;
   b. 12 points for a correct response in the second minute;
   c. 8 points for a correct response in the third minute;
   d. 4 points for a correct response in the fourth minute.

10. The sliding scale will be used during the scoring of the team competition.

11. The scoring system for the team competition for Algebra 1 and Geometry will not use the sliding scale. Points are as follows for each part:
   a. 4 points in the first minute
   b. 3 points in the second minute
   c. 2 points in the third minute
   d. 1 point in the fourth minute

11. There will be a total of 12 questions given during the team competition. Although 15 questions must be prepared, only 12 of those will be given. The other three are to be used in the case of an emergency such as a faulty question or if two questions are passed out at the same time. Questions are not to be replaced simply because no team answered correctly.

12. For competitions that have more than 25 schools competing, not more than one team per division per school may be seated during the team competition. This includes second teams of any type, experience or otherwise.

13. For competitions that have 25 or fewer schools competing, not more than two teams per division per school may be seated during the team competition, unless the host decides otherwise.

14. In the case that two teams from the same division and the same school are seated on the floor at the same time, then both of those teams will compete on a 'head-to-head' basis.

15. There will be only one trophy per division, per school awarded regardless of how many teams are on the floor.

16. In the case that two teams from the same division are on the floor, from the same school, and they both place in the top five (with their composite scores) the team with the lowest score will not receive a trophy, but will receive verbal recognition at the awards ceremony. That recognition is to be given at the end of that division's awards.

17. Scoring for the sweepstakes award will be the total t-score points accumulated from the school's Geometry, Algebra II, Statistics, Precalculus and Calculus divisions (best 4 scores).

18. All ties at all levels will be broken by the sudden death method and subsequent hierarchy.

19. Ties will be broken on the individual test by the following sudden death method:
    a. Compare the answer sheets beginning with question 1.
    b. Find the first two answers that are different and compare those as follows;
        1) A correct answer is better than a blank or an incorrect answer;
        2) A blank answer is better than an incorrect answer.
        3) If the papers are identical, the students will be called

down at the awards ceremony before any of the awards for their division are given. At this point the students involved will be given an easy question of at most one minute in length. The first correct answer will break the tie. This process will continue until the tie is broken.

4) If the tie is for last place, the students will be notified what place they are competing for. Otherwise, do not inform them.
5) Desks or tables should be provided for the students to work on.

20. These tie breaking questions will be written by the host school.

21. Ties will be broken for the division scores using the sudden death method as follows:

a. Compare the final team totals.
b. Compare team scores per question by points until there is a discrepancy. The highest number of points on that question breaks the tie.
c. Compare individual scores with the highest scoring team member.
d. Use the procedure outlined above.

22. Ties will be broken for the sweepstakes award by the sudden death method as follows:

a. Compare the highest division both schools counted toward the sweepstakes award in the following order: Calculus, Precalculus, Statistics, Algebra II, and Geometry

23. Non-division events (i.e. Computer contest, school wide test, relays, Mental Math, Speed Math etc.) are not to be included in the sweepstakes award. These events may be administered at the discretion of the hosting school.

24. A dispute center must be established and remain open at least 15 minutes after the answers have been posted for that test or after the completion of the team competition.

25. It will be each student's responsibility to correctly bubble in her/his ID # on the NCS scan sheet. Failure to correctly bubble the id # will mean automatic disqualification from that individual test.

26. When a school requests that they host a competition, the sponsor verbally agrees that he/she will abide the rules, regulations, and guidelines in the FAMATCGRAPH.

27. The registration fee is $10.00 per student. A small part of that fee (see financial form for current year) will be returned to **FAMAT** within one week following the competition. Late fees may apply.

28. Upon decision of the executive board of **FAMAT**, failure to comply with these guidelines could result in the host school not being allowed to host a **FAMAT** sanctioned competition for a minimum of one year. After that time the school's sponsor would have to petition the executive board of **FAMAT** to be allowed to host another competition under the umbrella of **FAMAT**.

29. All disputes concerning awards distribution or ranking must be submitted to the host sponsor in writing or email within 72 hours after the awards ceremony. These are the only disputes that will be accepted. Absolutely no verbal disputes regarding the above will be permitted!

30. Rules for the eligibility of students to compete in a particular division have been established.

REGIONAL COMPETITION HOST LETTER

Dear Hosting Sponsor:

Thank you for accepting the responsibility of hosting a Statewide or Regional FAMAT Mathematics Competition for the _____ season. Please use the **Sponsor's Quick Guide, FAMAT web page,** and **FAMATCGRAPH** to assist you in making your competition run smoothly.

The following are important items to note:

1. Calculator usage is as follows :
   Calculators are not allowed on any test EXCEPT that Statistics students may use any college board approved calculator for both the Individual and Bowl rounds.

2. *Host schools must post the names of schools and their school number whose registration they have received on the FAMAT list serve prior to the competition.*

3. At your registration desk, have the following information available:
   - Bubbling instructions for schools not enrolled on-line
   - A map of local restaurants

4. Each school should bring their own NCS answer sheets and registration sheets. However, you should have an ample supply of extra sheets for those schools that do not have their own. As each school turns in their forms, spot-check them for potential problems. Print school verification lists and give them to sponsors before the end of round one. **NOTE:** If pre-registration is done on-line, verification should be given at registration.

5. Your tests are included in this packet. The editors have proofed them all. However, if you find an error, please contact me immediately before you make any changes.

6. The tests you have received are ready to be copied. The individual test has 30 multiple choice questions while the team round has 15 questions, 2 per page. The sponsors' packet you provide at the end of the awards can include the following:
   - A copy of the Individual and Team Questions
   - A copy of the solutions to the Individual and Team Questions
   - The Individual, Team, and Sweepstakes results
   - Errata statement if any changes are made to tests or answer keys

7. The first round is to be Algebra 1, Precalculus and Calculus Individual with Algebra 2, Geometry and Statistics Individuals to follow in the second round.

8. Refer to the instructions for proctors; make copies and distribute to your proctors. Please remind your proctors of the following:
   - Read the instructions verbatim to all students.
   - Make sure that students from the same school are not sitting next to one another.
   - Remind them that the tests are exactly 60 minutes long.
   - Remind them of the calculator policy.

9. If a school wants to attend your Regional Competition but is from another region where a Regional competition is being held, they must get permission from the FAMAT President. Each student should be charged $12.00.

10. The registration fee is $10.00. You are responsible for sending $1 for a Regional and $1 for a Statewide for every registered test ($1.50 per test for crossover schools) to the FAMAT Treasurer, Kim Woolfenden. **Please use the form enclosed and send it to Kim within one week after your competition in the enclosed addressed and stamped envelope**.

11. **BEFORE YOU PACK UP THE COMPUTER: E-mail the results generated from the scoring program to The Technology Coordinator at floridamao@gmail.com, as soon as they are finalized, so that they may be posted on the FAMAT web site promptly.**

*****Sponsors and students have specifically requested this to be a priority, so that results from all 5 regions will be posted on the floridamao.org web page in a timely manner and available for all to see.(Appoint a capable person to do this; as hosting sponsor you may be very busy)**

Thank you again for all your hard work and dedication. Good luck with your competition. If you have any questions, please contact the FAMAT Vice President for Regional/Statewide Competitions.

Regional Directors:

See Executive Board

PART III

TEST WRITING GUIDELINES

TEST WRITING GUIDELINES

1. The philosophy of the FAMAT is to stimulate the student's interest in mathematics. Each test should be designed to encourage students to pursue the study of mathematics. As sponsors and mathematicians it is often easy to lose our perspective as to the clarity, difficulty and appropriateness of the test items. Please take your time writing questions and seek the advice of colleagues concerning the difficulty of each item. We would like to believe that every student will leave the testing room feeling good about mathematics and about his/her mathematical abilities.

2. Completed tests should be submitted in computer copy form. The tests must be completed and submitted to the editor by July 1 and to the vice president by September 1 of the school year for regional competitions.

3. Students at the sponsoring school of a Statewide may help in the writing of test items, but the responsibility for each test should be given to a teacher.

4. Each individual test is to contain 30 multiple choice items. Choice "E" will be standardized as none of the above. Choice "E" should be included in the answer choices as "E. NOTA."

5. Test content: Algebra I, Geometry, Algebra II, Statistics, Precalculus and Calculus tests should reflect the course student performance standards as provided by the state department of education in previous years. See the amounts to be covered in the performance standards at the end of this section.

   A. January and February competitions – 27 of the test items should reflect up to 75% of those standards and the remaining 3 items can be selected 'at large' from the course curriculum.

   B. For competitions held March 1 or later, all 30 items can reflect any topic area of the course curriculum.

   C. State convention content

      1. Theta – Algebra I, Geometry, Algebra II (no trigonometry)

2. Alpha – any mathematics topic below Calculus (Alg I – Pre-Calc)

3. Mu – Calculus topics only

6. Write reasonable distracters. A distracter should reflect common errors in computation or logic, incorrect or partial use of a formula or theoretical concept or a partial solution. Units should be included in the questions, not in the answer. Try to avoid distracters such as the following suggests:

During one basketball season, Barry Lird missed 17 free throws while making 91.5% of his total free throws. How many free throws did he make that basketball season?

A. less than 160
B. at least 160 but less than 175
C. at least 175 but less than 190
D. at least 190 but less than 205
E. at least 205

7. It is recommended that the answer and the distracter be written in the same form. It is additionally recommended that the answer choices be written in simplest form, that is fractions in simplest terms, denominators rationalized, and radicals in simplest radical form or decimal approximations to "x" places. Where appropriate, equations should be written in general form. Complex numbers should be written in *a + bi* form. Do not include an equivalent answer that has not been simplified as a distracter. Note the following incorrect example:

The length of the hypotenuse of an isosceles right triangle is five. Find the length of each leg.

A. $5\sqrt{3}$ *B.* $\frac{5}{2}$ *C.* $\frac{5}{\sqrt{2}}$ *D.* $\frac{5\sqrt{2}}{2}$ *E. NOTA*

Note that answers C and D are equivalent.

8. There should be no restrictions on the frequency of responses A, B, C, D, and E on a test. No
Specific attempt should be made to make As, Bs, Cs, Ds, and Es balance out. Once you have
decided upon the three distracters, place the four answers in some logical order, i.e. largest to
smallest, smallest to largest, alphabetical, etc. Once students realize that the choices have been

so ordered, they will not try to figure out if they have enough Cs.
9. Each test should include at least one E, but it is suggested that all of the Es be relatively easy
questions. Students become quite confused when they have to do an impossible problem only
to find out that the answer is E.
10. Difficulty factor of the questions
a. 10 should be similar to "A level" textbook questions. Most students can answer
these correctly.
b. 15 should be similar to "B level" textbook questions. Some or advanced students
can answer correctly.
c. 5 should be difficult. These items challenge the most advanced students. Few students
can answer correctly.
11. The questions should be spaced logically, not in the order of the difficulty. The first few
questions should be easy but there should be a very hard question somewhere in the first
10 because of the sudden death tiebreaker system. There should also be a few easy questions
near the end as a reward for the students who look at all the problems.
12. Team questions should begin with one or two easier questions, but in general team
questions should be more difficult that those on the individual tests. Questions with several parts
are encouraged, such questions reward teams that work as a team. Write 15 team questions,
12 to be used for competition and 3 as replacement questions.
13. For team questions, be careful to structure the wording of the question so that one and only one answer is obtainable. Answers should be in simplest form (see above). The graders task is greatly simplified if the answer to the team questions are numbers since there will be less of a chance that a mathematically equivalent answer will be submitted. For example, don't ask students to write an answer such as $3x+4y=6$. Ask them to find the quotient of A and B when the solution is written in the form $Ax+By+C=0$, where the GCF (A,B,C)=1, and A, B, C are integers.

This type of wording should lead the students to the one and only one answer of $\frac{3}{4}$.

14. Tests should be reviewed by at least three colleagues before being sent to the editor. Test items should be checked for difficulty, mathematical correctness, and clarity of writing. Content should be checked to make sure it corresponds with the content restrictions outlined in #5 above. It is recommended that a final photocopy or printed copy of the test be checked (not just a typed copy as printing and photo copying can alter darkness of figures etc.). When checking test items, be sure to review and check each item distracter, check for consistent format of the distracters. It is appropriate to use students (of the sponsoring school of a Statewide) to check the tests. They are often more likely than adults to find the hidden errors in a problem. Students also provide a better gauge of test difficulty and the time factor. At least one adult, however, other than the writer should check each test.
15. Submit a key and complete solutions with the test. Test writer's solutions key as well as an
answer key should be available in the dispute center.
16. Tests should include a cover sheet. It is recommended that the tests be copied on one side
only. Directions can be included on the test above questions #1.
17. It is recommended that the team questions and answer sheets be identified by contest,
division, and date with the date being only the month for regional competitions. For example:
February Regional Algebra II Individual Test
18. Tests will be submitted to the editor for final proofing.
19. After the editor has approved the test, 6 final copies will be sent to the vice president.

Tips for FAMAT Test Writers

The philosophy and mission of FAMAT competitions is to provide tests that promote enthusiasm and enjoyment of mathematics. Our goal is to insure that all students have a positive experience, but that even the most capable students find certain questions intriguing and challenging.

1. Start by making a list of the topics you will be using for your test

questions. Refer to the State standards (available through the FAMAT website) and course textbooks.

2. Review resources such as textbooks, old MAΘ contests, and test/problem banks.
3. Do not have more than 2 or 3 questions on any specific topic. Your test should be diverse and cover a variety of topics.
4. Avoid copying a problem exactly from a previous MAΘ test.
5. Write each potential question on an index card; on the back write the solution and answer. Then construct multiple choices based upon common errors you think a student would make.
6. Rate each question as *Easy, Medium, or Hard. Easy* means that most all students can answer the problem correctly; *medium* means that the stronger students can answer correctly, and *hard* means that the most advanced students may find the problem challenging, but it is doable.
7. A suggested mix of problems is ~ 10 easy problems, ~ 15 mediums, ~ 5 hard.
8. Avoid questions that can be easily worked backwards by just trying each multiple-choice, or that could be solved by "brute force" on a calculator.
9. Rearrange your questions by sorting the index cards. After you have constructed the order of the questions, then number the index cards with the problem number.
10. The test should start out with a few easy and medium questions, and include a hard question in the first 10, to help in case there is need for a sudden death tie-breaker.
11. Start working on writing your test well in advance of your due date; it takes time to write a good test.
12. After you type up your test, set it aside. Come back to it after a week or so, and work out the test from start to finish, alertly watching for accuracy and mathematical correctness. Time yourself – it should take you a lot less than 60 minutes for the entire test.
13. After you make corrections, print the 2nd draft and ask two colleagues to work out your test and make comments. Give them your key/solutions for reference.
14. Make corrections per colleagues' suggestions. Send the 3rd draft to your editor.
15. Listen to your editor's comments and make adjustments as suggested. It is expected that you will follow your editor's recommendations.

16. Make changes as suggested by your editor. Once this is complete, send the final draft back to the editor for final approval.
17. After you have received approval of the final draft from your editor, send test to the 2nd editor. Once that has final approval, proceed with the final checklist of items to be completed, copied, and sent to the FAMAT 1st VP.
18. At all times, the contents and nature of your test items should be treated as confidential information that is in no way accessible to current students who are competing in any division.

Letter to Writers

Dear _____,

Congratulations and Thank You!

You have been selected to write a _____ test for a FAMAT sanctioned regional competition. The FAMAT state board appreciates your valuable time.

Test writers are financially compensated. You will receive **$330** if I have your 30 question multiple choice test and 15 team questions with solutions, which have been corrected after the editing process, postmarked to me by **September 1st..** However, your test must be completed and mailed to your editor by **July 1st.** If it is late, you will forfeit a minimum of $50. If the final checklist is not completed and returned along with all of the items listed, you will forfeit a minimum of $20.

Your editor for your test is:

_____

Even if you have written tests in the past, please read the remainder of this letter along with the included Test Writing Guidelines and Course Standards as **some changes have been made**.

GENERAL INFORMATION:

- Your accuracy is extremely important and it is required that at least three of your colleagues proof the test *before* sending it to the editor.

- Please refer to the **Final Checklist** enclosed for the list of what items you will send to me.

- Calculator usage:
  NONE except for the Statistics division.

- Please refer to the FAMATCGRAPH and the enclosed Test Writing Guidelines and Tips for
  Test writers for specific information about content and appropriate level of difficulty.

- All items (test, team questions, solutions, and answers) must be
  Word documents.
  Handwritten items or use of Adobe Acrobat are no longer acceptable.

- Use standard fonts and size. Do not use all caps or Italics for your text style.

INDIVIDUAL TEST:

- You are to construct a 30 question multiple-choice test with answer E as NOTA for each of
  The 30 questions. At the top of the first page of the test you should define NOTA as "None
  of the Above Answers is Correct."

- The top of each page should be labeled with the division name, Regional, and the month
  of the competition. Do **not** include the year. The heading may be larger than the body of
  the test, and may be bolded, underlined, and/or in italics. For example:

March Regional Calculus Individual Test

- Use the following margins: left: 1"; right, top and bottom ¾".
- Your test and solutions should be typed and printed on only one side of each page.

TEAM TEST:

- You are to construct 15 Open Response Team Questions. The top of *each question* should be labeled with the division name, Regional, the question number, and the month of the competition. Do **not** include the year. For example:

March Regional

Algebra I Team: Question # 1

- The first two team questions should be easy enough for **every** team to answer correctly. Try to design a test with different levels of difficulty. Make at least 8 out of 12 of the questions multiple parts. Remember the FAMAT philosophy is to encourage and promote enthusiasm for mathematics. The team round should be enjoyable for all, and still hold some challenge for the better students.

- The team questions should be typed and have **two equally spaced** questions per page, with each question having the proper header indicating division and question number. There should also be a condensed version of all team questions condensed to within 2 pages. Please type the solutions.

PACKAGING YOUR TESTS:

- Once your test is ready to enter the editing process, email me your test and I will forward it to the editors.

- Make the changes that the editor has given and **re-submit** your test **final approval.**

- **The editor must see and approve the final copy of your test, team questions, and solutions.**

- Once your editor has given final approval, email me your tests in both word doc and pdf formats.
- Complete the **final checklist** and send it to me with your packaged test to me by September 1st.

To confirm that you accept this test writing assignment, please send me an e-mail (or letter) so stating. Feel welcome to contact me any time you have any questions.

On behalf of FAMAT, I would like to thank you for all of your valuable time and dedication to our organization.

Leslie Appleman
famattests@gmail.com
Vice President for Regional/Statewide Competitions

Test writer's Final Checklist

Your name (please print)
_____

Test division and month
_____

You should have the following criteria met:

_____30 question multiple-choice test typed in Word

_____ All individual solutions worked out in a detailed but concise manner – typed in Word

_____ 15 open response team questions evenly spaced (2 per page), with each question labeled with question number and Division (i.e. Algebra I, Geometry, Algebra II, etc.)

_____ All team questions condensed to 1 or 2 pages. Division and month should be at the top of each page.

_____ All team solutions worked out in a detailed but **concise** manner – typed. Division and month should be at the top of each page.

_____ A typed answer key of BOTH the multiple-choice answers and the team answers(not solutions) listed on one page. Division and month should be at the top of the page.

Please refer to and follow the specific instructions about font, size, margins, and headings that were in your original information.

Reminder: In order to receive the full **$330** stipend, you are asked to follow these instructions exactly and meet all deadlines. If the test is late, this final checklist is not completed and returned along with **all** of the items listed, scantrons are not included, or editor's advice not adhered to, then payment will be reduced accordingly.

Signature_____
_____

e-mail
address_____
____

Phone Number
_____

Address that you want your payment check sent to

_____

_____

_____

Please return this sheet and the above materials to the following address by
September 1st.

On behalf of the FAMAT board and all the participating students, thank you again for your contribution to the organization.

Vice President for Regionals/ Statewide
Leslie Appleman
famattests@gmail.com
5 Zealand PL
Palm Coast, FL
32164

Please email me if you have any questions

GENERAL GUIDELINES FOR STATE TESTS

All individual, topic, and computer tests have a 60 minute time limit, except the History of Math test which has a time limit of 30 minutes.

Students may not use a calculator on any of the tests except the Statistics test. Those students may use any college board approved calculator.

Please stay within the topic guidelines given as to the level of the test. Try to design a test with different levels of difficulty, including some problems that can be solved correctly by all students.

The final copy of the test may be sent to the test coordinator in either of the following ways:

1. 3 print copies of the test, 1 print copy of the solutions, 1 bubbled NCS answer key
2. test and solutions files sent on a CD if in WORD format

3. test and solutions files sent by email if in WORD format

Each test page should be headed as follows.

TOPIC
FAMAT State Convention 20xx

If writing bowl questions, there should be
A. 1 per page for the competitors
B. one or two sheets of bowl questions for the sponsor's packet
C. written solutions to the team questions, these do not need to be typed, but should be as concise as possible (1 or 2 pages).
D. each page for students should be labeled with the division name, the question number, and the date of the convention.
These may be submitted in any of the 3 ways mentioned above.

All state test writers have been assigned an editor. The editor must receive the test no later than October 30.
The final copy of the test is due to the test coordinator no later than December 30.

FAMAT STATE TEST WRITING GUIDELINES

Individual Tests and Bowls

Calculus Individual & Bowl - The content of the Calculus Individual Test and the Bowl questions consists of topics ranging from Algebra I through Calculus.

Alpha Individual & Bowl - The content of the Alpha Individual Test and the Bowl questions consists of topics ranging from Algebra I through Precalculus. The questions will primarily consist of topics from Trigonometry, Analysis, Advanced math, Analytic Geometry, or Precalculus. No Calculus is to be included at this level.

Theta Individual & Bowl - The Theta Individual Test and the bowl questions will cover topics from Algebra I, Geometry, and Algebra II. There will be no Trigonometry questions.

Each individual test will consist of 30 multiple choice questions appropriate to the content described above.

Answers are to be labeled A, B, C, D, and E. Answer 'E' will be 'NOTA', none of the above. This is to be designated at the beginning of the test.

Each bowl test writer should write 15 open ended/free response bowl questions which students are allowed to discuss orally while working together to derive a single solution.

Topic Tests

Theta level is for students enrolled in Geometry or Algebra II.

Alpha level is for students who have completed Geometry and Algebra II but have not been enrolled in a Calculus class.

Calculus level is for students enrolled in a Calculus class.

Open level tests can be taken by any level student.

Each topic test is to consist of 30 multiple choice questions appropriate to the topic.
Answers are to be labeled A, B, C, D, and E. Answer 'E' on each test is to be 'NOTA', none of the Above and is to be designated at the beginning of the test.

Topic tests and levels for each are as follows.

Theta Level
Functions
Geometry
Logs & Exponents
Theta Applications
Equations & Inequalities
Triangles (even years) rotates with Circles (odd years)
Quadrilaterals (even years) rotates with Perimeter, Circumference, Area, Volume (odd years)

Alpha Level
Alpha Applications
Analytic Geometry
Complex Numbers
Equations & Inequalities
Logs & Exponents
Matrices & Vectors
Trigonometry

Calculus Level

Area & Volume
BC Calculus
Calculus Applications
Integration
Limits & Derivatives
Sequences & Series
Differential Equations (even years) rotates with Multivariable Calculus (odd years)

Open

Statistics
History of Mathematics
Gemini
Probability
Discrete Math (even years) rotates with Number Theory (odd years)

Other Events

Relay - Each relay team will consist of three team members all of whom must be from the same school. You must have one member from each of the three divisions. The philosophy is that this is the only event which will favor those schools that have encouraged participation in FAMAT at all levels of their curriculum.

Computer - Students will be given a list of computer programs with different levels of difficulty to write. There could also be some multiple choice questions. Points will be awarded for the difficulty of the program. This is a non-sweepstakes competition.

Scrapbook – A scrapbook that tells the story of your chapter for the current year.

Poster – A poster developed at the convention after the topic has been announced.

Hustle – Each school may have one Hustle team – which will be comprised of 6 people from your school as follows: 1) the team will have

4 members – no more then 2 members from the same division, AND 2) each school must have a sponsor and an additional sponsor or student who will score for another school. If you do not have a sponsor or an additional person, you may NOT compete.

There will be 5 rounds of 5 minutes each. The team is presented with 125 questions, color coded by math categories: Geometry, Algebra II, Precalculus, Calculus, and Statistics. There will be 25 of each color/category. For each round, the team can answer no more than 5 of any one color. At the end of each round a one-minute warning will be given. Teams should have compiled answers for the judges to grade and will submit the paper with the question which includes the answer in the answer blank. Correct responses for Round 1 will receive 6 points, 5 points for Round 2, 4 points for Round 3, 3 points for Round 4, and 2 points for Round 5. Awards will be given to the top 10 teams. Individual awards will be given to each of the 4 student members of the team.

Course Student Performance Standards and Instructions

1. The following are the courses whose standards are to be used in preparing the tests.
   a. Algebra I Honors
   b. Geometry Honors
   c. Algebra II Honors
   d. Precalculus
   e. Advanced Placement Calculus AB
   f. Advanced Placement Statistics

2. 75% of the questions can come from any standard for each subject area defined as follows:

a. Algebra I	1.01 through 3.03
b. Geometry	1.01 through 4.02
c. Algebra II	1.01 through 4.07
d. Precalculus	1.01 through 10.07
e. AP Calculus AB	1.01 through 8.01
f. AP Statistics	As outlined in the AP Guidelines

ALGEBRA 1 HONORS STANDARDS
Revised 2007

<u>IMPORTANT NOTE</u>: The following 4 topics are NOT to be used at any time on an Algebra 1 test.

1. **Complex numbers** 2. **Sum/Difference of cubes** 3. **Trigonometry** 4. **Probability/Statistics**

Any topics NOT on this list CANNOT be included on any Algebra I test.

January and February Tests – Topics 1 – 4F
March Tests – Topics 1 – 4P

1. Compare and contrast the real number system and it various subsystems with regard to their structural characteristics.
   - A. Identify and apply the field properties of Real number system and its subsystems.
   - B. Identify subsystems of Real numbers.
   - C. Identify and apply the properties of equality and order to the Real number system and its subsystems.
   - D. Apply the definition of absolute value in algebraic and geometric situations.

2. Demonstrate an understanding of algebraic procedures and symbolism.
   - A. Translate between word phrases/sentences and algebraic expressions/equations and/or inequalities.
   - B. Perform operations on Real numbers.
   - C. Perform operations on polynomials.
   - D. Factor polynomials. (see above for restrictions)
   - E. Use the laws of exponents.
   - F. Solve linear equations and inequalities in one variable.
   - G. Solve a system of two first-degree equations with two variables using a variety of strategies.
   - H. Solve absolute value equations.

3. Use algebraic and related strategies to solve problems.
   - A. Solve real world and mathematical problems using first-degree equations and inequalities.
   - B. Solve real world and mathematical problems using a system of two first-degree equations in two variables.
   - C. Solve the following types of word problems: mixture, percent, work, distance/rate/time, coin, and current/wind speed.

4. Demonstrate an understanding of the geometry associated with equations and inequalities.

A. Determine and apply relationships among a first-degree equation in one variable; its corresponding inequalities; and their number line graphs.

B. Determine and apply relationships among a simple first-degree equation in one variable involving absolute value; its corresponding inequalities; and their number line graphs.

C. Determine relationships involving numerical coefficients; slopes; and y-intercept; between first-degree equations in two variables and lines in the Cartesian plane.

D. Determine the relationships between first-degree inequalities in two variables and half-plane in the Cartesian plane.

E. Determine solutions in systems of two first-degree equations in two variables using graphs in the Cartesian coordinate system.

F. Compare the solutions of a quadratic equation in one variable with the x-intercepts of theCartesian graph of the corresponding quadratic function.

G. Perform operations on rational algebraic expressions.

H. Perform operations of radical expressions.

I. Pythagorean Theorem, Midpoint formula, Distance formula

J. Solve quadratic equations in one variable.

K. Solve equations involving rational algebraic expressions and radical expressions.

L. Solve equations involving absolute value.

M. Represent and interpret functions and relations with ordered pairs; mapping tables; and Cartesian graphs.

N. Use and apply functional notation in situations involving mappings; tables; and Cartesian graphs.

O. Solve real world and mathematical problems using equations with rational or radical expressions in one variable.

P. Solve real world and mathematical problems involving direct and inverse variation.

Geometry Standards

January Tests: Topics I. – VIII.
February Tests: Topics I. – XI.
March Tests: I. – XII.

I. Points, Lines, Planes and Angles
- a) points, lines, planes
- b) naming lines, segments, rays, finding midpoint, finding distance
- c) naming and finding measures of angles
- d) postulates and theorems relating points, lines and planes
- e) use the terms collinear, coplanar, intersection

II. Deductive Reasoning
- a) if-then statements, converses, inverses, contrapositives
- b) special pairs of angles – vertical, complementary, supplementary
- c) perpendicular lines

III. Parallel Lines and Planes
- a) definitions, skew lines
- b) properties of parallel lines
- c) proving lines parallel
- d) theorems involving parallel lines
- e) angles of a triangle
- f) angles of a polygon, number of diagonals

IV. Congruent Triangles
- a) proving triangles congruent
- b) using congruent triangles (CPCTC)
- c) the isosceles triangle theorems
- d) medians, altitudes, and perpendicular bisectors

V. Quadrilaterals
- a) properties of parallelograms

b) ways to prove that quadrilaterals are parallelograms
c) theorems involving parallel lines
d) special parallelograms
e) trapezoids
f) kites

VI. Inequalities in Geometry
a) indirect proofs
b) inequalities for one triangle
c) inequalities for two triangles

VII. Similar Polygons
a) ratio and proportion
b) properties of proportion
c) similar polygons
d) proving triangles similar
e) proportional lengths

VIII. Right Triangles
a) similarity in right triangles (geometric mean)
b) the Pythagorean Theorem
c) converse of the Pythagorean Theorem
d) special right triangles
e) sine, cosine and trig ratios
f) applications of right triangle trig

IX. Circles
a) basic terms
b) tangents
c) arcs and central angles
d) arcs and chords
e) inscribed angles
f) angles with vertex in the circle and outside the circle
g) circles and lengths of segments

X. Constructions and Loci
a) perpendiculars and parallels
b) concurrent lines
c) the meaning of locus, locus problems, locus and construction

XI. Areas of Plane Figures

a) areas of rectangles, parallelograms, triangles, rhombuses, trapezoids,
kites, regular polygons, equilateral triangles, squares

b) circumferences and areas of circles

c) arc lengths and sectors of circles

XII. Lateral Area, Total Area and Volume of Solids

a) Prisms

b) Pyramids

c) Cylinders

d) Cones

e) Spheres

f) Areas and volumes of similar solids

Algebra 2 Standards

January and February Tests: Topics 1 – 8
March Tests : Topics 1 - 11

1. Real numbers and properties
-order of operations

2. Equations and inequalities
- literal equations and formulas
- conjunctions and disjunctions
- compound sentences with inequalities
- absolute value equations and inequalities

3. Linear equations and inequalities
- relations
- graphing equations
- functions
- slope
- parallel
- perpendicular
- equations of a line
- direct variation
- inverse functions

4. Systems
   - systems of equations
   - systems of inequalities
   - determinants
   - Cramer's rule

5. Radicals and irrational numbers
   - power functions
   - roots and radicals
   - rational and irrational numbers
   - operations with radicals
   - complex numbers

6. Polynomial functions and rational expressions
   - solving quadratic and higher order polynomial equations
   - discriminant
   - polynomial functions and their graphs
   - fractional equations
   - quadratic inequalities and their graphs
   - remainder and factor theorems
   - The Fundamental Theorem of Algebra
   - rational functions

7. Exponents and Logarithms
   - rational exponents
   - real exponents
   - exponential functions
   - logarithmic functions
   - properties of logarithms

8. Conics
   - circles
   - parabolas
   - ellipses
   - hyperbolas
   - graphing and solving quadratic systems
   - inverse variation

9. Sequences and Series
- arithmetic and geometric sequences
- arithmetic and geometric series
- infinite geometric series

10. Permutations, combinations and probability
- fundamental counting principle
- linear and circular permutations
- counting subsets
- combinations and products
- mutually exclusive and independent events
- binomial expansion
- binomial theorem
- Pascal's triangle

11. Matrices
- basic properties
- operations
- linear systems

PRE-CALCULUS STANDARDS (revised 2007)

January Tests: Topics 1 – 8
February Tests: Topics 1 – 11
March Tests: Topics 1 – 14

1. Demonstrate an understanding of the theory of functions.
- find domains; ranges; an specific values of functions in functional notation.
- given two functions perform the algebra of functions including composition of functions.
- determine if a given function is:
    a. symmetric (with respect to the axes and/or origin.
    b. periodic
    c. monotonic
    d. bounded
    e. continuous
- identify and graph polynomial and rational functions and determine asymptotes.

- define and use parametric forms of functions and convert from parametric to Cartesian form.
- given a function; determine the inverse and state whether or not the inverse is a function.

2. **Demonstrate an understanding of connection between circular and trigonometric functions and their inverses.**

- evaluate circular and trigonometric expressions involving any of the six functions and
  their inverses.
- given the equation for a circular (trigonometric) function; identify and/or sketch the graph
  and the graph of its inverse relation and state the domain and range of the original
- function and its associated inverse function.
- identify its equation when given a graph of any of the six circular functions.
- state the period; amplitude; phase shift; and vertical shift of a circular function and/or
  graph of the function.

3. Demonstrate an understanding of the trigonometric identities.

- prove that a given trigonometric equation is an identity by applying the Pythagorean
  relation and reciprocal identities.
- prove that an appropriate trigonometric equation is an identity when given the sum and difference formulas for the cosine; sine; and tangent.
- prove that an appropriate trigonometric equation is an identity when given the double order formulas for sine; cosine; and tangent.
- prove that an appropriate trigonometric equation is an identity when given the half-angle formulas for sine; cosine; and tangent.

4. Demonstrate the ability to apply trigonometry to problem solving situations.

- solve a right triangle given two sides; or a side and an acute angle.

- use the appropriate trigonometric function(s) to solve problems involving right or oblique triangles.
- apply the Law of Sines.
- apply the Law of Cosines.
- find the area of an oblique triangle.
- estimate the solution to a problem involving a right or oblique triangle.
- in the SSA case determine whether 0; 1; or 2 triangles exist and determine the
- triangles (if they exist)

5. Demonstrate the ability to solve a variety of trigonometric (circular) equations.

- find the general solutions to a trigonometric equation
- find particular solutions to a trigonometric equation within a given domain.
- solve equations involving inverse of circular/trigonometric functions.

6. Demonstrate an understanding of conic sections and loci.

- given the description of a locus determine the equation of the locus.
- given the equation of a line determine slope and y-intercept; and graph the line.
- given the equation of a circle determine the center and radius; and graph it.
- given the equation of a parabola determine vertex; focus; and directrix; and graph it.
- given equation of an ellipse in standard form; determine the center; foci; and vertices; graph it.
- given the equation of a hyperbola in standard form; determine the foci; vertices; and asymptotes; and graph it.
- determine new equations resulting from translation or rotation of axes.
- identify the graph of any second degree equation.
- express a quadratic equation in general form $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$ and use $B^2 - 4AC$ to distinguish conics.
- recognize degenerate and imaginary cases.

7. Demonstrate an understanding of the relationship between exponential and logarithmic functions and their application to problem situations.

- evaluate expressions involving rational exponents.
- sketch the graphs of exponential functions and logarithmic functions of different bases.
- solve equations involving exponential functions and logarithmic functions.
- solve real-world problems involving exponential functions and logarithmic functions.
- simplify expressions using the relationships between logarithms and exponents.
- express the number e and the expression 'e to the x' as infinite series

8. Demonstrate the ability to solve problems using concepts from matrix algebra.

- apply determinants to solve systems of equations.
- invert a square matrix.

9. Demonstrate the ability to solve problems using vectors.

- find a vector in standard position equal to a given vector.
- determine magnitude and direction of vectors.
- identify perpendicular and parallel vectors.
- determine the measure of the angle between two vectors.
- resolve a vector into component vectors.
- add and subtract vectors and multiply a vector by a scalar.
- find the dot product of two vectors.
- use vectors to solve real world problems.

10. Demonstrate an understanding of polynomial and rational functions; their parametric equations and their graphs.

- given a polynomial function determine intercepts and sketch the graph.
- given an equation of rational function determine intercepts and asymptotes and sketch the graph.
- given a set of parametric equations sketch the graph.

11. Demonstrate an understanding of graphs in the polar coordinate system and their relation to the Cartesian coordinate system.

- graph points in the polar coordinate system.
- convert between polar coordinates and Cartesian coordinates.
- express complex numbers in polar or trigonometric form.
- convert equations in polar form to Cartesian form.
- convert equations in Cartesian form to polar form.
- graph polar equations and identify specific types (roses; limacons; spirals; and conics)
- use de Moivre's theorem to find powers and roots of complex numbers.

12. Demonstrate understanding of mathematical induction and sequences and series.

- given an expression of rule for the nth term find any term of the sequence.
- given a sequence find a formula for the nth term in the sequence.
- find the nth term of a binomial expansion.
- find the sum of an arithmetic series.
- find the sum of a finite or infinite geometric series if it exists.
- define convergent and divergent sequences and series, determine limits if they exist.
- determine whether a sequence is increasing or decreasing.
- find the least upper bound and greatest lower bound of a sequence if they exist.
- express a series in sigma notation.
- use mathematical induction to prove series formulas.
- use mathematical induction to prove inequality formulas.

13. Demonstrate the ability to solve problems using probability and statistics.

- find probabilities of simple events.
- find probabilities using venn diagrams.
- find probabilities of mutually exclusive events.
- find probabilities of independent events.
- define an event and/or the complement of an event.
- find probabilities of the complement of an event.
- find conditional probabilities.
- find probabilities in binomial distributions.
- determine a standard (z) score in a normal distribution.

14. Demonstrate an understanding of the concept of limits and its applications.

- geometrically illustrate functions for which x increases without bound and find
  limits, if they exist.
- find when possible for any neighborhood of a number L; a neighborhood of a point *a*
  such that f(x) is in the neighborhood of L when x is in the neighbor hood of *a*.
- calculate limits of functions using theorems about limits.
- geometrically illustrate functions which are continuous at a point and/or continuous on
  an interval.
- given a rational function f(x) find the limit if it exists at a point of discontinuity.
- using the definition of the derived function of f(x) find the derive function.
- determine the equation of tangents to graphs of curves given the slope formula.

AP Calculus AB Standards

(January and February tests should be based on AB content only; March tests may contain up to 4 questions based on BC topics; State tests should contain only AB content; the exception is the BC topic test)

A. January and February competitions – 1.01-10.02

B. March competitions - 1.01 – 12.09 and BC Topics stated at the end of this list

1. Demonstrate the ability to identify and apply properties of algebraic; trigonometric; exponential; and logarithmic functions.

1.01 Identify the domain and range of a function.
1.02 Solve problems using the rules of sum; product; quotient; and composition of two functions.
1.03 Determine the inverse of a function.
1.04 Graph functions using symmetry and asymptotes.
1.05 Determine the zeros of a function.

2. Demonstrate the ability to apply the concept of limits to functions.

2.01 An intuitive understanding of the limiting process
2.02 Calculating limits using algebra
2.03 Estimating limits from graphs or tables of data
2.04 Define e.

3. Demonstrate the ability to identify asymptotic and unbounded behavior.

3.01 Understanding asymptotes in terms of graphical behavior
3.02 Describing asymptotic behavior in terms of limits involving infinity
3.03 Comparing relative magnitudes of functions and their rates of change (for example, contrasting exponential growth, polynomial growth, and logarithmic growth)

4. Demonstrate an understanding of continuity.

4.01 An intuitive understanding of continuity. (The function values can be made as close as desired by taking sufficiently close values of the domain.)
4.02 Understanding continuity in terms of limits
4.03 Geometric understanding of graphs of continuous functions (Intermediate Value Theorem and Extreme Value Theorem)

5. Apply the concept of the derivative.

5.01 Derivative presented graphically, numerically, and analytically
5.02 Derivative interpreted as an instantaneous rate of change
5.03 Derivative defined as the limit of the difference quotient
5.04 Relationship between differentiability and continuity

6. Demonstrate the ability to apply derivatives to find the slope of a curve and tangent and normal lines to a curve and as an instantaneous rate of change.

6.01 Slope of a curve at a point.
6.02 Tangent line to a curve at a point and local linear approximation
6.03 Normal line to a curve at a point
6.04 Instantaneous rate of change as the limit of average rate of change
6.05 Approximate rate of change from graphs and tables of values

7. Demonstrate the ability to compute derivatives of algebraic; trigonometric; exponential; and logarithmic functions.

7.01 Knowledge of derivatives of basic functions, including power, exponential, logarithmic, trigonometric, and inverse trigonometric functions
7.02 Derivative rules for sums, products, and quotients of functions
7.03 Chain rule and implicit differentiation
7.04 Find the derivative of the inverse of a function
7.05 Find higher order derivatives

8. Demonstrate the ability to identify increasing and decreasing functions; relative and absolute maximum and minimum points; concavity; and points of inflection.

8.01 Corresponding characteristics of graphs of f and f'
8.02 Relationship between the increasing and decreasing behavior of f and the sign of f'
8.03 The Mean Value Theorem and its geometric interpretation
8.04 Equations involving derivatives. Verbal descriptions are translated into equations involving derivatives and vice versa.
8.05 Corresponding characteristics of the graphs of f, f', and f''
8.06 Relationship between the concavity of f and the sign of f''
8.07 Points of inflection as places where concavity changes

9. Demonstrate an understanding of applications of the derivative.

9.01 Analysis of curves, including the notions of monotonicity and concavity
9.02 Optimization, both absolute (global) and relative (local) extrema
9.03 Modeling rates of change, including related rates problems
9.04 Use of implicit differentiation to find the derivative of an inverse function
9.05 Interpretation of the derivative as a rate of change in varied applied contexts, including velocity, speed, and acceleration
9.06 Geometric interpretation of differential equations via slope fields and the relationship between slope fields and solution curves for differential equations
9.07 Find basic antiderivatives based on known algebraic and trigonometric derivative rules

10. Demonstrate the ability to interpret definite integrals and use properties of definite integrals

10.01 Basic properties of definite integrals (examples include additivity and linearity)
10.02 Numerical approximations to definite integrals. Use of Riemann sums (using left, right, and midpoint evaluation points) and trapezoidal sums to approximate definite integrals of functions represented algebraically, graphically, and by tables of values
10.03 Definite integral as a limit of Riemann sums
10.04 Definite integral of the rate of change of a quantity over an interval interpreted as the change of the quantity over the interval:

$$\int_a^b f'(x)\,dx = f(b) - f(a)$$

11. Demonstrate the ability to use the techniques of integration
.

11.01 Use of the Fundamental Theorem to evaluate definite integrals
11.02 Use of the Fundamental Theorem to represent a particular antiderivative, and the analytical and graphical analysis of functions so defined

11.03 Antiderivatives following directly from derivatives of basic functions, including algebraic, trigonometric, inverse trigonometric, exponential, and logarithmic functions
11.04 Antiderivatives by substitution of variables (including change of limits for definite integrals)

12. Demonstrate the ability to apply antiderivatives to solve problems including growth and decay, particle motion, and finding areas and volumes

12.01 Finding specific antiderivatives using initial conditions, including applications to motion along a line
12.02 Solving separable differential equations and using them in modeling (including the study of the equation y' = ky and exponential growth)
12.03 Find the average value of a function
12.04 Find the total distance traveled by a particle along a line
12.05 Find the accumulated change from a given rate of change
12.06 Find the area under a curve using integration
12.07 Find the volume of solids of revolution using disc, washer, or shell methods
12.08 Find the volume of solids with known cross sections
12.09 Use integration appropriately to model physical, biological, or economic situations or other similar applications

Calculus BC Topics for use only on March or State BC Topic tests. These topics should not be tested on January or February tests.

+ L'Hospital's Rule, including its use in determining limits and convergence of improper integrals and series
+ Parametric, polar, and vector functions The analysis of planar curves includes those given in parametric form, polar form, and vector form.
+ Analysis of planar curves given in parametric form, polar form, and vector form, including velocity and acceleration
+ Area of regions bounded by polar curves
+ Numerical solution of differential equations using Euler's method
+ Derivatives of parametric, polar, and vector functions

+ Antiderivatives by substitution of variables (including change of limits for definite integrals), parts, and simple partial fractions (non-repeating linear factors only)
+ Improper integrals (as limits of definite integrals)
+ Solving logistic differential equations and using them in modeling
Polynomial Approximations and Series
+ Motivating examples, including decimal expansion
+ Geometric series with applications
+ The harmonic series
+ Alternating series with error bound
+ Terms of series as areas of rectangles and their relationship to improper integrals, including the integral test and its use in testing the convergence of p-series
+ The ratio test for convergence and divergence
+ Comparing series to test for convergence or divergence
+ Taylor polynomial approximation with graphical demonstration of convergence (for example, viewing graphs of various Taylor polynomials of the sine function approximating the sine curve)
+ Formal manipulation of Taylor series and shortcuts to computing Taylor series, including substitution, differentiation, antidifferentiation, and the formation of new series from known series
+ Functions defined by power series
+ Radius and interval of convergence of power series
+ Lagrange error bound for Taylor polynomials
+ Maclaurin series and the general Taylor series centered at x = a
+ Maclaurin series for the functions ex, sinx , cosx , and **Error! Objects cannot be created from editing field codes.**

Statistics Test Guidelines by Rob Snow, June 2004
Modified by Carol Wetherington June 2011

January Test:

I. Exploring Data
A. Interpreting graphs of distributions of one variable data (stemplot, histogram)
1. Center and spread
2. Outliers and unusual features
3. Shape (symmetric, skewed)

B. Summarizing distributions of one variable data
1. Mean and median
2. Range, Interquartile Range, standard deviation
3. Quartiles, percentiles, z-scores
4. Boxplots
5. effect of linear transformations on summary statistics

C. Comparing distributions of one variable data (back to back stemplots, parallel boxplots)
1. Compare center and spread
2. Compare clusters and gaps
3. Compare outliers and other unusual features
4. Compare shapes.

D. Exploring two-variable data sets
1. Scatterplots
2. Correlation and linear relationships
3. Least squares regression line
4. Residual plots, outliers, influential point
5. Logarithmic transformations and linearity.

II. Planning a Study
A. Overview of methods of data collection
1. Census
2. Sample survey
3. Experiment
4. Observational study

B. Planning and Conducting Surveys
1. Simple random sample
2. Sampling error
3. Well designed and conducted survey elements
4. bias
5. Stratified and Systematic sampling

C. Planning and Conducting Experiments
1. Experiments vs. Observational Studies
2. Confounding,control group,placebo,blinding
3. Treatment, experimental units,randomization

4. Randomized paired comparison design
5. Replication, blocking

III. Anticipating Patterns: Models Using Probability and Simulation
A. Probability
1. "Law of Large Numbers" concept
2. Addition Rule, Multiplication Rule, conditional probability, independence
3. Discrete random variables
4. Binomial, geometric distributions
5. Mean and Standard Deviation of random variable from 3,4.

B. Combining independent random variables
1. Notion of independent vs. dependent
2. Mean and Standard Deviation for sum and difference of independent random variables

C. Normal Distributions
1. Properties
2. Using tables of normal distributions
3. Using it as a model for measurements

February Tests:

I. Exploring Data
A. Interpreting graphs of distributions of one variable data (stemplot, histogram)
1. Center and spread
2. Outliers and unsual features
3. Shape (symmetric, skewed)

B. Summarizing distributions of one variable data
1. Mean and median
2. Range, Interquartile Range, standard deviation
3. Quartiles, percentiles, z-scores
4. Boxplots
5. effect of linear transformations on summary statistics

C. Comparing distributions of one variable data (back to back stem plots, parallel boxplots)

1. Compare center and spread
2. Compare clusters and gaps
3. Compare outliers and other unusual features
4. Compare shapes.

D. Exploring two-variable data sets
1. Scatterplots
2. Correlation and linear relationships
3. Least squares regression line
4. Residual plots, outliers, influential point
5. Logarithmic transformations and linearity.

II. Planning a Study
A. Overview of methods of data collection
1. Census
2. Sample survey
3. Experiment
4. Observational study

B. Planning and Conducting Surveys
1. Simple random sample
2. Sampling error
3. Well designed and conducted survey elements
4. bias
5. Stratified and Systematic sampling

C. Planning and Conducting Experiments
1. Experiments vs. Observational Studies
2. Confounding,control group,placebo,blinding
3. Treatment, experimental units,randomization
4. Randomized paired comparison design
5. Replication, blocking

III. Anticipating Patterns: Models Using Probability and Simulation
A. Probability
1. "Law of Large Numbers" concept
2. Addition Rule, Multiplication Rule, conditional probability, independence
3. Discrete random variables

4. Binomial, geometric distributions
5. Mean and Standard Deviation of random variable from 3,4.

B. Combining independent random variables
1. Notion of independent vs. dependent
2. Mean and Standard Deviation for sum and difference of independent random variables

C. Normal Distributions
1. Properties
2. Using tables of normal distributions
3. Using it as a model for measurements

D. Sample Distribution
1. Proportion Distribution
2. Sample Mean Distribution
3. Central Limit Theorem
4. Difference between two independent sample proportions
5. Difference between two independent sample means

IV. Statistical Inference: Confirming Models
A. Confidence Intervals
1. Meaning of
2. For a proportion
3. For a sample mean

B. Significance Testing
1. Null and Alternative Hypotheses, p-values, one and two sided tests
2. Proportion Test
3. Sample Mean Test

C. Special cases of normally distributed data
1. t-distribution
2. single sample t procedure

March Tests:

I. Exploring Data

A. Interpreting graphs of distributions of one variable data (stemplot, histogram)

1. Center and spread
2. Outliers and unsual features
3. Shape (symmetric, skewed)

B. Summarizing distributions of one variable data

1. Mean and median
2. Range, Interquartile Range, standard deviation
3. Quartiles, percentiles, z-scores
4. Boxplots
5. effect of linear transformations on summary statistics

C. Comparing distributions of one variable data (back to back stem plots, parallel boxplots)

1. Compare center and spread
2. Compare clusters and gaps
3. Compare outliers and other unusual features
4. Compare shapes.

D. Exploring two-variable data sets

1. Scatterplots
2. Correlation and linear relationships
3. Least squares regression line
4. Residual plots, outliers, influential point
5. Logarithmic transformations and linearity.

II. Planning a Study

A. Overview of methods of data collection

1. Census
2. Sample survey
3. Experiment
4. Observational study

B. Planning and Conducting Surveys

1. Simple random sample
2. Sampling error
3. Well designed and conducted survey elements

4. bias
5. Stratified and Systematic sampling

C. Planning and Conducting Experiments
1. Experiments vs. Observational Studies
2. Confounding,control group,placebo,blinding
3. Treatment, experimental units,randomization
4. Randomized paired comparison design
5. Replication, blocking

III. Anticipating Patterns: Models Using Probability and Simulation
A. Probability
1. "Law of Large Numbers" concept
2. Addition Rule, Multiplication Rule, conditional probability, independence
3. Discrete random variables
4. Binomial, geometric distributions
5. Mean and Standard Deviation of random variable from 3,4.

B. Combining independent random variables
1. Notion of independent vs. dependent
2. Mean and Standard Deviation for sum and difference of independent random variables

C. Normal Distributions
1. Properties
2. Using tables of normal distributions
3. Using it as a model for measurements

D. Sample Distribution
1. Proportion Distribution
2. Sample Mean Distribution
3. Central Limit Theorem
4. Difference between two independent sample proportions
5. Difference between two independent sample means

IV. Statistical Inference: Confirming Models
A. Confidence Intervals
1. Meaning of
2. For a proportion

3. For a sample mean
4. For a difference between two proportions
5. For a difference between two means (paired or unpaired)

B. Significance Testing
1. Null and Alternative Hypotheses, p-values, one and two sided tests
2. Proportion Test
3. Sample Mean Test
4. Difference between Proportions
5. Difference between Means (paired, unpaired)
6. Chi-Square Testing for goodness of fit, independence

C. Special cases of normally distributed data
1. t-distribution
2. single sample t procedure
3. Two sample (independent and matched pairs) t procedures
4. Inference for slope of least squares line

FAMAT GLOSSARY

Alpha division **- At the state convention, this division is for students in grades 9-12 who have completed Algebra II and Geometry and have not been enrolled in any Calculus course. See eligibility sheet.**

associate members **– Students in grades 9-12 who have completed two semesters of Algebra I with a grade of B or better and are enrolled in a third semester of advanced mathematics.**

Barbara Nunn Test **– This test given in December is for Theta level students who have not been enrolled in a course higher than Algebra II or Geometry. The test consists of 30 multiple choice questions on topics from Algebra II and Geometry. Only schools that have paid dues and enrolled online by November 1 will receive this test in the mail. This test is given on the same day as the Helen Dostal Test.**

calculator use **– Calculators may not be used in any division except Statistics. In the Statistics division, only College Board approved calculators (no QWERTY keyboard) may be used. No calculators may be used on the History of Math test at State. Statewide hosts may make their own calculator rules.**

Calculus division **- At the state convention, this division is open to all students in grades 9-12. See eligibility sheet.**

crossover **- Schools can request to attend Regionals in other regions when there is a** ***hardship. Crossover forms are available in this guide. Due date is December 1.***

crossover fees **- $9.00 per competitor for regular registration, $17.00 is the late registration fee. $3.50 of the fee goes to the losing regional host and $4.00 to the gaining host with $1.50 from the gaining host going to FAMAT.**

disputes **– disagreement with an announced answer, either verbally during a team round or written or posted after an individual round, which is written and filed within a prescribed time period after the completion of an event**

divisions **- Algebra I, Geometry, Algebra II, Statistics, Precalculus, and Calculus, at Regionals and Statewide competitions. Theta, Alpha, and Calculus at State Convention. A division competition consists of two parts : an individual test and a team round. Teams consist of 4 or less people.**

division score **– the sum of two scores, the school's four individual scores of students assigned to the team and their team score**
eligibility for Regionals/Statewide **- Students take one specific division test depending**
on what math class they are enrolled in.
eligibility for State Convention **- Schools attending the FAMAT State Convention must be**
current members of National Mu Alpha Theta and FAMAT. Each student attending is to be a full or associate member of both organizations. See eligibility sheet.
enroll **– Entering student FAMAT ID #s online at floridamao.org. See pages on creating**
FAMAT Student ID #s and enrolling online.
Executive Board **- Governing body of FAMAT.**
Fall interschool test **- A test that all members of a FAMAT chapter may work on together and submit one set of answers. Information is available in this guide.**
FAMAT **- Florida Association of Mu Alpha Theta, the governing body for Mu Alpha Theta in the state of Florida.**
FAMATCGRAPH **- FAMAT competitions guidelines, rules and procedures handbook, available on-line at floridamao.org.**
FAMAT Statewide Competitions **– State wide competition sponsored by FAMAT, tests written by FAMAT. Students at the host schools may compete. These competitions occur only when no school volunteers to host a Statewide. Schools are asked by the FAMAT Board to host this competition.**
FAMAT list serve **- An online message center/communication system. See information in this guide on "Sponsor's Quick Guide" pages.**
FAMAT Sponsor's Competition Reference Guide **- This guide has all information necessary for competing in FAMAT sanctioned competitions.**
FAMAT State Convention **- End of year competition held in the spring. Information packet is online at floridamao.org . Only FAMAT member schools and dues paying associate and full members may attend.**
full members **- Students in grades 9-12 who have completed four semesters of college preparatory mathematics, are enrolled in a more advanced mathematics course or have completed the highest**

course offered at the school, have maintained a B or better average in mathematics.

Helen Dostal Test **- Test for Precalculus students and above at member schools that have paid dues and enrolled online by November 1. The test consists of 30 multiple choice questions. This test is given on the same day as the Barbara Nunn and Susan Hiller tests.**

host **- Contact person at each school that is hosting a Regional or Statewide competition.**

individual **– student taking the multiple choice test**

join **- Paying dues and submitting member names to FAMAT. See FAMAT membership form in this guide.**

NCS scoring sheets **- Forms used for competitions. See more information in this guide.**

The phone numbers for ordering are 800-367-6627 and 800-827-9219.

Non-FAMAT Fees **- Schools that are not FAMAT members must pay a $50 fee at each Regional and Statewide competition in addition to the registration fee. New schools are exempt from this fee for one year.**

postmark deadline **- Date when items are to be postmarked.**

QWERTY keyboard **– a keyboard that is laid out like a computer**

regional competitions **- Regional competitions are open to schools that are located within that regional area. A school may attend a regional competition outside their region only if it has received prior approval by submitting a Crossover Request Form submitted to the FAMAT President. If a Regional competition is not scheduled for your region on a specified Regional date, schools may crossover to another region without filing a region crossover request. The writing of competition questions for Regional Competitions is coordinated through FAMAT. On the day of the Regional Competition, the same competition questions and tests are used at all regional sites around the state.**

regional directors **- Contact person, one for each region, elected at state convention.**

regions **- There are five regions, divided by counties, in the state of Florida for competitions. Region I - Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Madison, Okaloosa, Santa Rosa, Taylor, Wakulla, Walton, Washington.**

Region II - Alachua, Baker, Bradford, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Lafayette, Levy, Marion, Nassau, Putnam, St. Johns, Suwannee, Union, Volusia.
Region III - Brevard, Indian River, Lake, Martin, Okeechobee, Orange, Osceola, Seminole, St. Lucie, Sumter, Palm Beach (north of Lake Worth Road)
Region IV - Charlotte, DeSoto, Glades, Hardee, Hernando, Highlands, Hillsborough, Lee, Manatee, Pasco, Pinellas, Polk, Sarasota.
Region V - Broward, Collier, Hendry, Miami-Dade, Monroe, Palm Beach (south of Lake Worth Road).
***register* – signing up to attend a competition. Registration is done by completing the appropriate forms and sending it along with fees to the host of the event. A registration form is included in this packet. Also see hosts/dates/postmark deadlines. Beginning in 2011, schools must also register on-line at floridamao.org.**
***registration fees* - Fees paid to the hosting school when participating in a competition.**
$7 per student if postmark deadline (14 or more days before the event) is met, $15 late fee (3-13 days before) with host's written permission. Sponsors will be expected to pay for all students that have been registered whether or not they attend the competition. Schools showing up on the day of the competition with no prior notification will not be able to compete. Also see crossover fees instructions and creating student ID #s and enrolling online.
***Statewide competitions* – Statewide competitions are open to all schools. At a Statewide competition the host school is responsible for all test writing. Students at the host school may not compete in the competition, unless the tests have been written and edited by people other than the students.**
***student ID #s* - Numbers issued by sponsors to all students competing in FAMAT competitions. The numbers are used in the scoring program to associate a student's name with his/her unique FAMAT ID#. These numbers can be enrolled online at floridamao.org**
***sudden death* –**
I. Ties will be broken on the individual test by the following sudden death method:
a. Compare the answer sheets beginning with question 1.

b. Find the first two answers that are different and compare those as follows:

i. a correct answer is better than a blank or incorrect answer

ii. a blank answer is better than an incorrect answer

iii. If the papers are identical, the students will be called down at the awards ceremony before any of the awards for their division are given. Students involved will be given an easy question of at most one minute in length. The first correct answer will break the tie. This process will continue until the tie is broken.

iv. If the tie is for the last award, the students will be notified what place they are competing for, otherwise, they will not be informed.

II. Ties will be broken for the division scores using the sudden death method as follows:

a. Compare the final team totals

b. Compare team scores per question by points until there is a discrepancy. The highest number of points on that question breaks the tie.

c. Compare individual scores with the highest scoring team member.

d. Use the procedure outlined in 23 above.

III. Ties will be broken for the sweepstakes award by the sudden death method as follows:

a. Compare the highest division both schools counted toward the sweepstakes in the following order: Calculus, Precalculus, Statistics, Algebra II, Geometry.

<u>Susan Hiller Test</u> - This test open to all Algebra I students (both high school and middle school). The test consists of 30 multiple choice questions on topics from Algebra I. Only schools that have paid dues and enrolled online by November 1 will receive this test in the mail. Directions are available in this guide. This test is given on the same day as the Helen Dostal and Barbara Nunn Test.

***<u>sweepstakes awards</u>* – sum of the top 4 division t-scores for Geometry, Algebra II, Statistics, Precalculus, and Calculus for**

Regionals and Statewide. See the State Convention packet to determine how the sweepstakes standings are determined for that event.

Theta division **- At the state convention, this division is for students in grades 9-12 currently enrolled in Geometry or Algebra II. See eligibility sheet.**

Traditional scrapbook **– the cover and pages must open like a book. The spine is not considered part of the cover. Do not submit the scrapbook in boxes, suitcases, or anything that detaches from the actual scrapbook.**

www.floridamao.org **- Official website for FAMAT. Enroll students ID #s here, link to National Mu Alpha Theta, Mu's News online, ask questions, download tests, state packet, etc.**

APPENDIX A - COMPETITION SIGNS

ALGEBRA 1 INDIVIDUAL

ALGEBRA 1 TEAM

GEOMETRY INDIVIDUAL

GEOMETRY TEAM

ALGEBRA 2 INDIVIDUAL

ALGEBRA 2 TEAM

PRECALCULUS INDIVIDUAL

PRECALCULUS TEAM

CALCULUS INDIVIDUAL

CALCULUS TEAM

STATISTICS INDIVIDUAL

DISPUTE CENTER

SPONSOR'S ROOM

REGISTRATION

RESTROOM WOMEN

RESTROOM MEN

Algebra I

Individual Test

Rooms

_____

Algebra I

Team

_____

Geometry

Individual Test

Rooms

_____Geometry

Team

_____

Algebra II

Individual Test

Rooms

_____

Algebra II

Team

_____

Precalculus

Individual Test

Rooms

Precalculus

Team

_____

Calculus

Individual Test Rooms

Calculus

Team

Statistics

Individual

Test

Rooms

Team Round
Rooms

Dispute

Center

Sponsors'

Room

Registration

Women's

Restroom

Men's

Restroom

APPENDIX B - COMPETITION FORMS

COMPETITION CHECKLIST

FAMAT COMPETITION ASSESSMENT FORM

FINANCIAL REPORT FORM

COMPETITION REGISTRATION FORM

MASTER REGISTRATION SHEET

EVALUATION FORM

TEAM SCORE SHEET

TEAM QUESTION ANSWER SHEET

DISPUTE FORM

Checklist for hosting a regional/Statewide Mu Alpha Theta Competition

___1. FAMATCGRAPH read thoroughly.

___2. Contest date approved and on school calendar

___3. Order trophies (at least 1 or 2 months before competition)

___4. Tests received (contact Leslie Appleman at famattests@gmail.com)

___5. All forms copied (see FAMATCGRAPH)

___6. All signs copied and ready to post (available in FAMATCGRAPH)

___7. All tests copied

___8. All team questions copied

___9. Programs run off

___10. Competition staff meeting for personnel assignments and procedures

___11. Procure NCS scan machine and FAMAT scoring computer; set up in advance to be sure it is ready. Download lists of students and schools from floridamao.org.

___12. Registration packets are prepared - should include evaluation form, dispute forms, map of nearby food, establishments, programs

___13. Registration materials are ready - have extra scan forms available

___14. Post competition packets prepared - should include copies of all tests - individual and team – with solutions, all results, dispute forms, errata sheet, answer sheets, enrollment forms

___15. All supplies ready for individual and team testing - including instructions to be read

___16. Results copied and stuffed in packets

___17. Dispute corrections (Errata sheet) copied and stuffed in packets

After the competition

___18. E-MAIL your results (all tests, divisions, and sweepstakes score reports) to the webmaster before you shut down the computer. This must be done promptly. It is suggested you also save the file to a disk or on the Region computer.

___19. E-mail a copy of the Errata Sheet to 1st VP FAMAT

___20. Treasurer's packet finished and mailed with assessment form and check to the treasurer

FAMAT COMPETITION
ASSESSMENT FORM

(Use only after you HOST a competition.)

Your Region : 1 2 3 4 5

Date of Competition : _____

Name of Host School :
_____

To calculate the amount to send to FAMAT, complete the following steps :

1) Total number of individual tests registered for :
_____

2) Multiply line 1 by $1.00 for Regional or Statewide :
_____

3) Number of schools attending and non FAMAT members :
_____

4) Multiply line 3 by $70.00 :
_____

5) **TOTAL to send to FAMAT – add lines 2 and 4 :**
_____

Note: For crossover ($12.00 registration fee), disperse the following amounts per crossover student : to the losing host school - $4.00, to the gaining host school - $6.00, and to FAMAT - $2.00.

Make check payable to "FAMAT" or "Florida Association of Mu Alpha Theta" and send payment and completed forms (this page and the next page) within one week following the competition to :
Attn. Kim Woolfenden

14220 N. HWY 301
Thonotosassa, FL 33592

FAMAT Florida Tax ID Number : 65-0069925

Please complete the Financial Report form on the next page.

FAMAT COMPETITION
FINANCIAL REPORT

(Use only after you HOST a competition.)

Number of individual test registrations : _____

Number of schools attending : _____

Cost of awards (trophies) : _____

Cost of copying (printing) : _____

Cost of paper : _____

Cost of postage : _____

Cost of school personnel : _____

Cost of Student Delegates' lunch : _____
(Statewide Competitions only)

Cost of security : _____

Miscellaneous costs : _____

FAMAT assessment : _____

TOTAL INCOME : _____

TOTAL EXPENSES : _____

TOTAL PROFIT (LOSS) : _____

FAMAT COMPETITION REGISTRATION FORM

This form must be filled out on-line effective with the 2011 competition season.

MASTER REGISTRATION SHEET

PAGE: _____

SCHOOL NAME	ID. NO.	HERE √	TOT. #	TOTAL AMOUNT PAID	RCPT. √	TOT. # LATE	TOTAL AMOUNT LATE	RCPT. √	REFUND AMOUNT

You may choose to do this on your own spreadsheet.

Team Score Sheet

Page _____ Division_____

ID#	School Name	1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	

SCHOOL_____ID #_____ QUESTION NO._____

DIVISION_____ TEAM # _____

ANSWER_____
_____

SCHOOL_____ID #_____ QUESTION NO._____

DIVISION_____ TEAM # _____

ANSWER_____
_____

SCHOOL_____ID #_____ QUESTION NO._____

DIVISION_____ TEAM # _____

ANSWER_____
_____

SCHOOL_____ID #_____ QUESTION NO._____

DIVISION_____ TEAM # _____

ANSWER_____
_____

DISPUTE FORM

Question #_____

INSTRUCTIONS:

1. Fill our form completely (*Printing legibly*).
2. Write out your solution in detail on the bottom and give your answer in the space provided.
3. Explain why and where, in your solution, you are disputing the posted or given answer.
4. Present completed form at the dispute center within 15 minutes after the testing session has ended.
5. No oral discussion.

Name _____ID # _____

School_____ _

Circle one:Algebra 1 Geometry Algebra 2

Precalculus Calculus Statistics

Circle one: Individual Team

Posted Answer:_____ Your Answer: _____

Your solution and explanation (continue on back if necessary):

APPENDIX C - FAMAT APPLICATIONS/FORMS

FAMAT MEMBERSHIP APPLICATION

REGION CROSS OVER REQUEST

FAMAT COMPETITION ASSESSMENT FORM

FAMAT COMPEITTION FINANCIAL FORM

APPLICATION FOR HOSTING A FAMAT SANCTIONED REGIONAL OR STATEWIDE COMPETITION

AGREEMENT FOR HOSTING A FAMAT SANCTIONED COMPETITION

TEST WRITER INFORMATION SHEET FOR REGIONAL COMPETITIONS

FAMAT STATE TEST WRITER APPLICATION

APPLICATION FOR THE EXECUTIVE BOARD

TRANSFERSHIP OF SPONSORSHIP

FAMAT APPLICATION FOR 2017-2018 MEMBERSHIP
HIGH SCHOOLS ONLY

Postmark Deadline – November 1, 2017

This form must be filled out on-line effective this school year.

Please check the appropriate boxes.

- ***We have (or have applied for) a National Charter.*** ***National Chapter # _____***
- ***We have subscribed to FAMAT List serve (floridamao.org).***
- ***We have received and read the Sponsors' Competition Reference Guide. Download from floridamao.org.***

Is this application a renewal or an update for the current year? (circle one)
Is this application for a new school? YES NO (circle one)

School Name: _____ County _____ Region _____

Address: _____ Phone: (_____) _____- _____ FAX: (_____) _____-_____

City: _____, FL ZIP CODE: _____.

Lead Sponsor : _____Home Phone : (_____) _____-_____

E-Mail :

_____

_____

School Hours: FROM _____ am to _____ p.m. Best Contact Time - School:_____ Home _____

On an attached sheet, please type or print the names of all full and associate members separately as shown below. Type the names in alphabetical order within grade level. If you intend to send an update, send the complete, final list with the update before the update deadline given below.

FULL MEMBERS (type or print by grade level) **ASSOCIATE MEMBERS (type or print by grade level)**

NAME GRADE NAME GRADE

Number of students listed: Full _____ + Associate _____ = _____ (Total)

FAMAT School dues are renewable annually according to the following schedule:

1 - 10 students $70.00
Over 10 students .....$7.00 per student_____

<u>DUES PAID</u>: $70.00 OR TOTAL NUMBER OF STUDENTS x $7.00 = $ _____.00
Please make checks payable to the "Florida Association of Mu Alpha Theta" or to "FAMAT". Student membership updates of this renewal application form will be accepted until March 1 of the current school year. DO NOT SEND RENEWAL APPLICATION WITHOUT PAYMENT. Mail the payment along with the form by November 1 (the due date) of the current school year to:

Attn. Kim Woolfenden email: woolfmath@aol.com
14220 N. Hwy 301
Thonotosassa, FL 32592

******** DO NOT SEND ANYTHING BY SPCIAL DELIVERY/SIGNATURE REQUIRED***********

For questions, e-mail Kim at the e-mail address above.

MIDDLE SCHOOLS ONLY
COMPETITION FEE FOR 2017-2018
Postmark Deadline – November 1, 2017
This form must be filled out on-line effective this school year.

Please check the appropriate boxes.

- ***We have subscribed to FAMAT List serve (floridamao.org).***
- ***We have received and read the Sponsors' Competition Reference Guide. Download from floridamao.org.***

Is this application a renewal or an update for the current year? (circle one)
Is this application for a new school? YES NO (circle one)

School Name: _____ County _____ Region _____

Address: _____ Phone: (_____) _____- _____ FAX: (_____) _____-_____

City: _____, FL ZIP CODE: _____.

Lead Sponsor : _____Home Phone : (_____) _____-_____

E-Mail :
_____
_____

School Hours: FROM _____ am to _____ p.m. Best Contact Time - School:_____ Home _____

FAMAT School dues of $70 are renewable annually.

Please make checks payable to the "Florida Association of Mu Alpha Theta" or to "FAMAT". Student membership updates of this renewal application form will be accepted until March 1 of the current school year. DO NOT SEND RENEWAL APPLICATION WITHOUT PAYMENT. Mail the payment along with the form by November 1 (the due date) of the current school year to:

Attn. Kim Woolfenden email: woolfmath@aol.com
14220 N. Hwy 301
Thonotosassa, FL 32592

******** DO NOT SEND ANYTHING BY SPCIAL DELIVERY/SIGNATURE REQUIRED***********

For questions, e-mail Kim at the e-mail address above.

FAMAT REGION CROSSOVER REQUEST

THIS FORM IS TO BE SUBMITTED ONLINE BY DECEMBER 1

This form is the official request form for a school wishing to compete at another regional site other then the one they are assigned for a particular regional date. A request for change can only be considered for a school submitting this form based upon a hardship (i.e. extreme variance in distance). This request must be submitted to the President of FAMAT by December 1 of the year prior to the regional competition, and the president will make the decision in the name of the FAMAT Executive Board. If you submit information by e-mail be sure to include all information requested on this form.

Crossover fees are $12 per individual test. The losing regional host receives $4, the gaining host receives $6 with $2 going to FAMAT. Late registration crossover fees are $17.00 per competitor.

Please PRINT or TYPE all information.

Date request submitted_____

Name of School :

_____

Lead Sponsor's name :

_____

Lead Sponsor's E-mail Address :_____

School address : _____**City :**_____ **Zip :**_____

Lead Sponsor's Work Phone :_(_____)_____**Home Phone :** _(_____)_____

Date of regional competition for crossover: January February March

Region assigned: I II III IV V Site
_____

Miles to assigned Regional test site _____

Region desired: I II III IV V Site
_____

Miles to desired Regional test site _____

Approximate number of students involved _____

Other explanation of request
_____

_____
_____

_____
_____

Action taken by president of FAMAT _____ approved _____ disapproved

_____

_____
Signature of president ***Date***

Application for Hosting a FAMAT Sanctioned REGIONAL OR STATEWIDE Competition

Please fill out this form completely.

School Address_____
___

City_____ **Zip Code**_____

Contact Person_____ **e-mail**_____

Contact's Home Phone Number (_____)_____

Schools should make their **checks payable to**

_____

Schools should send their **registration to**

_____

Name_____

School_____

Address_____

City_____

Zip Code_____ Phone #(___)_____
email_____

If someone else is to **receive the tests**, please give the following information:

Name_____

School_____

Address_____

City_____

Zip Code_____ Phone #(___)_____
email_____

Type of Competition (circle one) **STATEWIDE REGIONAL**

Preferred Month (circle one) **JAN FEB MARCH Year**_____

FAMAT will do the following for the host school:

1. FAMATCGRAPH (guideline for running a competition) will be online to be downloaded.
2. Announce the competition, contact person, and postmark deadline in the Sponsors
Competition Reference Guide (available online for all FAMAT schools in September
3. Provide the necessary scoring equipment: computer, NCS scanner, scoring software.
4. Provide Regional tests for 6 divisions (Algebra 1 – Calculus including Statistics).

You will find other responsibilities of the host school in the FAMATCGRAPH.

Please return this form to: Leslie Appleman

Application to EDIT or WRITE a FAMAT Sanctioned REGIONAL Test

***Please* PRINT *and fill out this form* completely.**

Name _____Year of HS Grad. (if student)_____

School _____

School Phone (_____)_____ School FAX (_____)_____

School Address_____

City_____ State _____ Zip Code_____

Home Address_____

City_____ State _____ Zip Code_____

Home Phone (_____)_____ E-mail_____

EDIT or WRITE (circle one)

Type of Test(s):

Algebra 1 Geometry Algebra 2 Precalculus Calculus Statistics

Preferred Month: January February March Any

Test writers will be paid $330 and editors will be paid $75 if they meet all deadlines and provide all of the required materials listed on the "Final Checklist."

Test writers MUST proofread their own tests and have 2 colleagues proofread the test BEFORE it is sent to the editor.

There will be a minimum of a $50 penalty to test writers if deadlines are missed and a minimum of a $10 penalty if all items are not included.

Please return this form to: Leslie Appleman
famattests@gmail.com
5 Zealand PL
Palm Coast, FL 32164

State Test Writer Application for FAMAT State Convention

Return to Radleigh Santos American Heritage; 12200 W. Broward Blvd.; Planatation, FL, FL 33325 or email: radleigh.santos@ahschool.com ON OR BEFORE April 30.

Name _____Home Phone_____

Home Address _____ City _____ Zip _____

e-mail _____

School _____

If you are a high school student, give your graduation date. _____
Do not apply if you will be in high school next year.

Circle the test(s) that you would be interested in writing for the FAMAT State Convention.
Tests in italics rotate every other year. The first test listed is for the even years.

Theta Level Tests	**Alpha Level Tests**	**Calculus Level Tests**
Theta Ind. & Team	Alpha Ind. & Team	Calc Ind. & Team
Geometry (Theta)	Alpha Applications (Alpha)	BC Calculus (Calc)
Functions (Theta)	Analytic Geometry (Alpha)	Calculus Applications (Calc)
Logs & Exponents (Theta)	Complex Numbers (Alpha)	Integration (Calc)
Circles or Quadrilaterals (Theta)	Equations & Inequalities (Alpha)	Limits & Derivatives (Calc)
Theta Applications (Theta)	Logs & Exponents (Alpha)	Sequences & Series (Calc)

Circumference, Perimeter, Area, Volume or Triangles (Theta)	Trigonometry (Alpha)	*Multivariable Calc or Linear Algebra(Calc)*
Equations & Inequalities (Theta)	Matrices & Vectors (Alpha)	Area and Volume (Calc)
Statistics (Open)	*Number Theory or Discrete Math (Open)*	History of Math (Open)
Gemini (Open)	Interschool (Open)	Computer (Open)
Relays	Probability (Open)	

Other topic test(s) that the Executive Board should consider_____

APPLICATION FOR EXECUTIVE BOARD

NAME:
_____

HOME PHONE: (_____)_____-_____ BEST TIME:
_____

SCHOOL:
_____

SCHOOL ADDRESS:
_____

CITY: _____ ZIP CODE:
_____

SCHOOL PHONE (_____)_____-_____ BEST
TIME_____

You may apply, be nominated, for any office or regional Representative, that you would like. Elections will take place during the sponsors' meeting at the MU ALPHA THETA state convention.

I wish to be nominated for the office of
_____
(IDENTIFY OFFICE OR POSITION)

or _____ for the _____ - _____
school year. (REGIONAL REPRESENTATIVE)

I understand that I will follow, to the best of my abilities, the responsibilities as set forth in the FAMAT constitution.

APPLICANT'S SIGNATURE _____DATE _____

PLEASE RETURN TO THE CURRENT PRESIDENT OF FAMAT

FLORIDA ASSOCIATION OF MU ALPHA THETA
TRANSFER OF RESPONSIBILITY FORM

(Assumption of Sponsorship)

Home School Information

Name of School _____

Sponsor's Name _____FAMAT ID No._____

Competition Site _____Date _____

Receiving Sponsor Information

Name of School

_____

Sponsor's Name_____FAMAT ID No._____

FAMAT's policy states that every student that competes or attends a FAMAT sanctioned event must have a school sponsor that is either a teacher or administrator at that school with them at that event. The home school named above is transferring sponsorship responsibilities for the Florida Association of Mu Alpha Theta competition named above to the receiving sponsor given identified above. This allows the stated home school's students to participate at the given competition. The receiving sponsor assumes the responsibility of acting as sponsor for the home school student(s) at that competition only. This is not a transfer of liability.

_____ _____

Home School Principal Signature Receiving School Principal Signature

_____ _____

Home School Sponsor Signature Receiving School Sponsor Signature

Name(s) of the Student(s) who are being transferred :

_____

_____

_____

_____

_____

_____

_____

_____